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ENTRIES 879-1397

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Vol. VI DECEMBER, 1920 No. 3

ENTRIES 879–1397

AGRONOMY

C. V. PIPER, *Editor*
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879. ADDIS, JOSE M. **El bledo manso. (Amaranthus blitum L.). [Pig weed.]** Revist. Agric. Com. y Trab. 3: 74–75. *1 fig.* 1920.—It is pointed out that this weed has been used as a food for hogs. An analysis is published indicating that it is of considerable value.—*F. M. Blodgett.*

880. AHR, J., AND CHR. MAYR. **Gerstensorten und Dungung. [Barley varieties and manuring.]** *123 p.* Datterer & Cie.: Freising, Germany, 1919. M. 3.50.—Short rev. in Jour. Landw. 67: 287. 1919.

881. ANONYMOUS. **Solanacea cubana gigantesca como planta forragera. La yerba de soler. [A large Cuban forage plant. The soler plant.]** Revist. Agric. Com. y Trab. 3: 93–95. *4 fig.* 1920.—It was discovered that horses and cattle showed a great liking for the foliage of *Solanum verbascifolium* L. An analysis indicated considerable feed value, being high in protein.—*F. M. Blodgett.*

882. ANONYMOUS. **The Uba cane.** Internat. Sugar Jour. 22: 300–301. 1920.—This article discusses various accounts given for the origin of Uba cane. Experiments with a sport of the Uba cane are being carried out on the Natal Estates. The new variety seems to be very hardy, a vigorous grower and more capable of withstanding drought and disease than the older established Uba. The sport was found in a field of second ratoons and propagation cuttings were taken from the stool. Nearly 300 acres of the sport are under cultivation.—*E. Koch.*

883. ANONYMOUS. **The Uba cane. Some further data as to its origin.** Internat. Sugar Jour. 22: 326–328. 1920.—An anonymous writer in the South African Sugar Journal suggests the derivation of the name Uba and origin of Uba cane in Natal. A box of tops had been sent to Natal from Poona, India. Three letters were on the label from which *Uba* was read—it was assumed that the last three letters of Poona read like *Uba*. This is somewhat like the position taken by HARRIS, who supposes the name to have come from a damaged label, *Uba* being part of name "Boubaya" (a Madagascar cane) which reached Natal via India whence it was brought by MITCHELL in 1885. WATTS writes of the existence of Uba cane in Brazil quite fifty years ago but he does not think it of Brazilian origin, nor that the name is derived from "viba" (meaning reed) which MR. NOEL DEERR is inclined to believe.—*E. Koch.*

884. Barber, C. A. **Sugar cane seedling work in India. Part II.** Internat. Sugar Jour. 22: 307–312. *2 pl., 4 fig.* 1920.—The work on the crossing of sugar cane in developing canes suited to North Indian conditions has been successful, due to the selection of fertile-styled, pollen-sterile mothers. Many suitable mothers without pollen and with starch-filled styles have been found, and a large number of undoubted crosses are now being obtained every year, with thin indigenous Indian canes and thick tropical canes of good quality, among which there no doubt will be many suited to North India. A detailed study of seedlings shows variations among them in small particulars—such as size and shape, width of leaf and thickness of stem, color marks in various parts, and general habit. An attempt was made to study correlations between the external morphology of the cane plant and the richness of its juice. There appears to be a very definite negative correlation between (1) leaf width and leaf length and (2) richness of juice; the module of the leaf (length divided by width) gave equally definite positive correlation with sugar content as did also length of cane; thickness of cane yielded no definite correlation to richness of juice, but there were indications that thinner varieties have a richer juice. The cages used in crossing the canes and the methods employed are described, and a list of publications prepared by workers on the cane-breeding station at Coimbatore is given.—*E. Koch.*

885. Barber, C. A. **The growth of the sugar cane.** Internat. Sugar Jour. 22: 313–317. *1 fig.* 1920.—The sixth article of a series. Shows how connected study of growth of stem and leaves of cane plant has been rendered possible, and reviews Kammerling's work on the relative growth of joint, sheath and blade, and the more recent and up-to-date work of Knijper.—*E. Koch.*

886. Barber, C. A. **The growth of the sugar cane. VII.** Internat. Sugar Jour. 22: 371–375. *1 pl., 1 fig.* 1920.—Length of cane depends on length of individual joints and their number. Height of field cane varies according to weather, soil, cultivation and amount of manure applied. the effect being seen in the length of the joints rather than in the number produced. Length of joint is also affected by the period in which the cane is formed, the first formed canes having shorter joints than those arising later, but earlier canes produce so many joints that these canes are usually longer. In each individual cane the length of the joint varies in the different parts of the cane, joints below the ground being extremely short and disc-like, the length rapidly increasing above ground until after the period of active growth, when joints become shorter. When flowering occurs the joints at the top become longer, leaf sheaths are longer, blades shorter and joints decrease in thickness. The longest joints, on an average, are the fifth and sixth joints above ground, each increasing until the maximum is reached, after which a regular decrease takes place. A series of measurements made at crop time may be relied upon to reproduce the character of the cane growth throughout the season that has passed. The length curve of the joints taken at harvest shows the nature of the past growing season and any abnormality will make itself clearly noticeable. From a study of the joint and other growth curves the suitability of a tract for cane growing in general may be judged.—*E. Koch.*

887. Barber, C. A. **Sugar cane seedling work in India.** Part I. Internat. Sugar Jour. 22: 251–257. 1920.—Work in progress at Coimbatore Cane-breeding Station deals not merely with the raising of cane from thick, tropical parents, but also aims to obtain definite crosses between these and the many thin, indigenous Indian canes; it also aims to obtain sets of seedlings suited to the several different conditions of the Indian sugar tracts. Attempts were made to raise seedlings, but these failed because arrowing is rare in North India, and it was found that when it occurred the stamens were almost invariably completely closed and without pollen. Arrowing in India is affected by latitude, by time of planting and by the character of the soil and its treatment, while the usefulness of the arrows for the production of seedlings depends, in the first instance, on their possession of abundance of open anthers. It appears that the amount and character of the rainfall may be directly influential. Arrows vary as much in female fertility as in the fertility of the male organs. If the stigma and style contain starch it is probable that the flowers are capable of producing seed and seedlings. Each

variety has its particular time of flowering, thick canes, as a class, flowering earlier than thin ones. In a group of thick cane seedlings a small proportion show differences from the usual type. These produce masses of flowers that are especially fertile, yielding great numbers of viable seeds. They flower early and are used for crossing with thick canes. Wild canes have been used similarly. Various devices have been used to hasten the later flowering of the thin canes and retard the early flowering of the thick canes, with the result that some of the former have been hastened and a number of crosses formerly unobtainable have been secured. Different varieties and groups show great diversity in development of arrows. The fullest development is found in various highly developed thick canes, as well as in the most primitive class of the Indian indigenous ones. Many of the North Indian canes have been induced to flower for the first time and with further study the tardy, and at present infertile, members may some day produce flowers which will add to the range of possible crosses.—*E. Koch.*

888. Blair, T. A. **A statistical study of weather factors affecting the yield of winter wheat in Ohio.** Monthly Weather Rev. 47: 841–847. *2 fig.* 1919.—The statistical method is applied to the problem of determining what are the important factors affecting the growth of winter wheat in Ohio, and their relative importance. The results are expressed as partial correlation coefficients and in linear regression equations, in which the coefficients are evaluated by the method of least squares. Temperature and precipitation are used because of their general nature and because observations of these features extend over the entire region. Temperature variations have more influence upon the yield than do precipitation variations, because of the regular and frequent storms peculiar to the region. Calculated yields agreed very closely with those given by the U. S. Bureau of Crop Estimates. The chief requisites for a good yield are a warm March and June and a cool and dry May. The critical periods in the growth of the plant are those connected with "jointing," "heading" and "filling."—*E. N. Munns.*

889. Cross, W. E. **Cane nomenclature in Argentina.** Internat. Sugar Jour. 22: 278–279. 1920.

890. Gerlach, Prof. Dr. **Kohlensaüredungung. [Fertilizing with carbon dioxide.]** Mitteil. Deutsch. Landw. Ges. 35: 370–371. 1920.—The experiments on the effect of increasing the carbon dioxide content of the air, first reported in this journal in 1919 (no. 5), were repeated in a light, airy greenhouse. In a small section of the house the air was made to contain 23 times as much carbon dioxide as it had before the experiment. No beneficial results were obtained, as is evident from the following condensed summary of the harvested dry matter from the three plants named.

	TOBACCO	MAIZE	WHITE MUSTARD	TOMATO FRUITS
In the open	100	100	100	100
In glass house without extra CO_2	100	75	88	98
In glass house with extra CO_2	105	80	66	73

—*A. J. Pieters.*

891. Howard, Albert, Gabriel L. C. Howard, and Abdur Rahman Khan. **Studies in the pollination of Indian crops. I.** Mem. Dept. Agric. India. (Bot. Ser.) 10: 195–220. 1919.—A report on the flowering, methods of pollination, fertilization, natural cross fertilization and improvement of leguminous crops, such as *Crotalaria juncea, Cajanus indicus Spreng., Indigofera arrecta Hochst., Indigofera sumatrana Gaertn.;* oil-seed crops, such as *Linum usitatissimum L., Eruca sativa Lam., Sesamum indicum L., Guizotia abyssinica Cass.;* and crops grown for fiber, such as *Corchorus capsularis L., Corchorus olitorius L.,* and *Hibiscus sabdariffa L.*—*F. M. Scherts.*

892. Keitt, T. E., and A. W. Murray. **The influence of certain factors on the time of opening of cotton.** Georgia Agric. Exp. Sta. Bull. 130: 17–34. *3 fig.* 1919.—Information relative to the development of the cotton plant and the early opening of the flower is important owing to the rapid advance of the boll weevil. In the variety tests six strains of Cleveland Big Boll led all others. On heavy clay the largest yield was obtained with 600 pounds 3-8-2 fertilizer. This gave also the highest yield to October 1st, on this type of soil, and the highest per cent open October 1st. The highest yield on the medium clay was obtained where 600 pounds of an 8-3-9-formula was used. On this soil the highest yield to October was with 600 pounds of an 8-3-6. This result shows that on this type of soil the farmers should continue to use potash under heavy boll weevil infestations. The highest yield on the sandy soil was obtained where 600 pounds of an 8-3-6-formula were used, but the largest yield to October 1st, was where 600 pounds of 8-3-3-formula were used. Acid phosphate has hastened the maturity of cotton. This is also true of Tennessee blue rock phosphate. Ground or raw rock phosphate seemed, in the main, to hasten maturity. Where lime was used with acid phosphate the maturity was delayed. For the season of 1919 late topdressing with a mixture of ammonia and nitrate of soda gave profitable increases in yield. The addition of potash to nitrogen in topdressing did not seem to delay maturity, although the results do not indicate a profit from this practice.—*T. H. McHatton.*

893. Koch, L. **De waarde van stekken en van knol unitloopers als bibit voor het planten van bataten.** [**Value of cuttings from mature stems of grown plants and from sprouts of sweet potatoes, for planting purposes.**] Korte Ber. Landbouwvoorlichtingsd., Dept. Landb., Nijverheid en Handel. (Selectie-en zaadtuin) (Buitenzorg) 19: 1–6. 1919.—Both methods of propagation proved equally good, but the latter was found to be of greater practical value.—*L. Koch.*

894. Piola-Caselli, (E.). **Les associations agricoles pour l'irrigation des terrains d'après le type italien des consorzii.** [**Agricultural associations for irrigation after the Italian co-operative type.**] Bull. Inst. d'Egypte 1: 71–85. 1919.—A brief résumé of the history of irrigation in Italy is given. The organization of the different kinds of coöperative associations, both public and private, is discussed, and the laws governing them are cited. Finally, the particular suitability to Egyptian conditions of coöperative associations for the development and operation of plants for irrigation by pumping is emphasized.—*Geo. F. Freeman.*

895. Russell, E. J. **The Ithaca agricultural experiment station.** [Rev. of reports for the years 1914–17.] Nature 104: 482–483. 1920.—Summarizes some results of work on soy-bean nodule organism (Mem. Cornell Univ. Agric. Exp. Sta. [Ithaca] Bull. 386), direct assimilation of certain carbohydrates by green plants (*Ibid.* 9), costs of production of farm crops (*Ibid.* Bull. 377), and fertile and infertile soils.—*O. A. Stevens.*

896. Sifton, H. B. **Longevity of the seeds of cereals, clovers and timothy.** Amer. Jour. Bot. 7: 243–251. *5 fig.* 1920.—The longevity of seeds of wheat, oats, timothy, alsike and red clover was studied by storing samples from crops of these plants grown in representative parts of Canada and making a germination test on a small portion of each sample every year. From 17 to 19 such annual tests have been made on each crop. With wheat, there is no decrease in the percentage of germination for five years, and but little for eleven years. From 11 to 15 years, however, there is a very rapid loss of germinative power and then a somewhat slower loss, until after 18 years no seeds at all will grow. In the case of oats, there is a slight increase in germinative power for 7 or 8 years and then a gradual decrease which is much slower than that in wheat. 41 per cent of the seeds were still alive after 19 years. Timothy differs from wheat and oats in that the germinative power begins to fall off at once. After 7 years it drops rapidly and after the 12th year slows up again. Practically all seeds were dead at 17 years. Alsike and red clover show a regular and steady decline from the very first. After 17 years, however, a small proportion of seeds of both were still alive.—*E. W. Sinnott.*

897. Smith, J. Warren. **Effect of snow on winter wheat in Ohio.** Monthly Weather Rev. **47**: 701–702. *1 fig.* 1919.—The relation of snow cover to the yield of wheat is not a direct one. Snow in itself, if above the normal late in the year, may be detrimental, but it is of great value during periods of unseasonable temperature by preventing frost-heaving of soil when freezing and thawing conditions prevail.—*E. N. Munns.*

898. Syme, J. E. **Farmers' experiment plots. Winter fodders, Western District, 1919.** Agric. Gaz. New South Wales **31**: 315–317. 1920.—Report of trials by six farmers with miscellaneous forage crops for pasture, with records of the carrying capacity.—*C. V. Piper.*

899. Vendrell, Ernesto. **Estudios sobre los abonos verdes en rotación con las demás plantas cultivadas en Cuba. III.** [Green manures in rotation with other plants in Cuba. III.] Revist. Agric. Com. y Trab. **3**: 71–74, 112–115. 1920.

900. Vornemann, Prof. Dr. **Die Kohlenstoffernahrung der Kulturpflanzen.** [The carbon dioxide assimilation of cultivated plants.] Mitteil. Deutsch. Landw. Ges. **35**: 302–303. 1920.—This is a semi-popular paper setting forth especially the value of the CO_2 that is developed in the soil by the decay of organic matter and reaches the surface below the leaves of the growing crop. The practical conclusion is reached, that manure or green manure should be so applied as to produce the maximum decay during the height of the growing season. The value of tillage consists partly in encouraging the evolution of carbon dioxide.—*A. J. Pieters.*

901. Waldron, J. W., A. Gartley, C. R. Hemenway, J. N. S. Williams, G. P. Wilcox, T. H. Petrie, and H. P. Agee. **Report of Committee in Charge of the Experiment Station.** Rept. Exp. Sta. Hawaiian Sugar Planters' Assoc. for 1919. *49 p.* 1920.—Discussion of certain fungus and insect enemies of sugar cane, together with reports as to progress of investigations concerning the fertilizer requirements of cane, refining qualities of commercial sugar, utilization of molasses, sugar-cane breeding work, and methods of cultivation.—*J. M. Westgate.*

902. Wenholz, H. **Broom millet seed as feed for stock.** Agric. Gaz. New South Wales **31**: 305–307. 1920.—Broom millet seed of good quality is a comparatively cheap feed for poultry, and, if fed judicially, for horses, sheep, cattle and pigs. The most serious drawback is the difficulty of storage. The three essentials for safe storage are, (1) quick reduction of moisture content, (2) good ventilation and (3) well-cleaned seed free from dirt. Grinding of the seed before feeding is advisable, except for sheep and poultry; soaking improves the feed for pigs.—*C. V. Piper.*

903. Willcox, Sir William. **The Sudd Reservoir or Nature's provision of perennial irrigation and flood protection for the whole of the Nile valley.** Bull. Inst. d'Egypte **1**: 35–69. 1919.—The author treats the problem under seven headings, which are discussed in order. The total profitably cultivable area of Egypt is given as 6,663,000 acres of which 1,312,000 acres are uncultivated. Of the area cultivated, 4,064,000 acres are under perennial irrigation (a continuous water supply) and 1,287,000 acres are under basin irrigation (covered with water only once a year when the Nile is in flood). For the whole of Egypt, the water required annually for the irrigation of lands now cultivated amounts to 9,000,000,000 cubic meters. When all of the available land is cultivated, 13,500,000,000 cu. m. will be required. To irrigate 500,000 acres in the Sudan, 3,750,000,000 cu. m. of water will be required annually. Since only 5,500,000,000 cu. m. are naturally available, there will be a deficit of 11,500,000,000 cu. m. The present net capacity of Aswan reservoir is 2,000,000,000 cu. m., leaving 8,500,000,000 cu. m. to be provided by additional works. To furnish additional water, the author recommends that the natural storage in the Sudd region of the White Nile be drawn upon, and describes the various projects necessary to accomplish this. Another storage reservoir could also be formed by the construction of a barrage on the Saubat (Sabat) river at a point above Nassar. This reservoir is designed to furnish the 3,750,000,000 cu. m. of water needed for the Sudan. By raising the Aswan dam, its storage capacity could be increased to 4,000,000,000

cu. m. A regulating barrage on the White Nile and training works on the Rosetta and Damietta branches in lower Egypt would serve to lessen floods. Eight appendices are added as follows: (A) The actual value of the agricultural land of Egypt; (B) Utilization of the ground water of the Nile valley; (C) Flush and lift irrigation; (D) The Aswan dam; (E) Some aspects of the White Nile reservoir; (F) Mr. C. E. Depuis on the Lake Tsana reservoir; (G) Sir William Garstin on the Gebel and Zeraf Rivers of the Sudd region; (H) Total estimate of the costs of reservoirs and flood protection for Egypt and the Sudan.—*Geo. F. Freeman.*

BIBLIOGRAPHY, BIOGRAPHY AND HISTORY

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904. Åkerman, Å. **En växtförädlares underbara levnadsöde. Några ord om Aron Aronsohn och hans verksamhet. [A plant breeder's remarkable fate. Some words about Aron Aronsohn and his work.]** Sver. Utsädesf. Tidskr. 29⁴: 165–168. 1919.—A biographical sketch of Aron Aronsohn.—See also Bot. Absts. 6, Entry 1447.

905. Anonymous. **Leonard Cockayne. [Biographical notice.]** With portrait. New Zealand Jour. Sci. Tech. 2: 231–234. July, 1919.

906. Anonymous. **Bulletin Agricole de L'Institute Scientifique de Saigon.** Brooklyn Bot. Gard. Rec. 8: 146. Oct., 1919.—Notes the appearance of the first number of this new publication.—*C. S. Gager.*

907. Anonymous. **The Botanic Garden, Havana.** Kew Bull. Misc. Inf. [London] 1919: 101–102. 1919.

908. Anonymous. **The dahlia.** Missouri Bot. Gard. Bull. 7: 41–46. *Pl. 12–13.* 1919.

909. Anonymous. **How flowers were named.** Sci. Amer. Supplem. 87: 176. 1919.

910. Anonymous. **Necrologia. [Necrology.]** Revist. Agric. Com. y Trab. 2: 476. 1919.—Records the death of Patricio Cardín, head of the department of Entomology and Vegetable Pathology of the Agronom. Exp. Sta., Cuba.—*F. M. Blodgett.*

911. Anonymous. [Rev. of: Fox, R. Hingston. **Dr. John Fothergill and his friends: Chapters in eighteenth century life.** 8°. *xxiv + 434 p., 13 pl.* Macmillan & Co.: New York.] Jour. Botany 58: 56–59. 1920.

912. Aragón, Francisco de las Barras de. **Cartas del botánico francés Léon Dufour a Don Mariano Lagasca, existentes en el Archivo de la Real Academia de Medicina de Sevilla, encontradas y trascritas. [Letters of the French botanist, Léon Dufour to Mariano Lagasca, in the Archives of the Royal Academy of Medicine of Seville, found and transcribed.]** Bol. R. Soc. Española Hist. Nat. 19: 394–400. 1919.—Gives four letters written from St. Sever by Léon Dufour, partly in French partly in Spanish, to Mariano Lagasca, Director of the Royal Botanical Garden at Madrid, in 1817 and 1819, mainly relating to specimens being sent to Madrid, also containing notes on interesting trips planned in the Pyrenees; requests for specimens and notes on certain species, particularly lichens; comments on the appearance of new botanical literature; discussion as to whether a certain epidemic in Cadiz might be yellow fever. There is also a letter, in Spanish, from Maria Tadea Gonzalez to Lagasca relating the forwarding to Lagasca of books and botanical and entomological specimens which had been accumulated by Lorente. The author of the article notes that Dufour had gone to Spain as a member of Napoleon's army, and had formed a friendship with Vicente Alfonso Lorente at Valencia. Because of sympathy for him as a fellow botanist, Dufour had probably saved Lorente from execution for the prominent part he had played in the defense of

the city. Most of the books and specimens left with Lorente by Dufour were finally forwarded to Lagasca at Madrid.—*O. E. Jennings.*

913. Arnaud, G. **Rapport sur le fonctionnement de la société depuis sa fondation jusqu'à la fin de 1919.** [Review of the acts of the society from its foundation to the close of 1919.] Bull. Soc. Pathol. Vég. France [Paris] 6: 154–158. Nov.–Dec., 1919.—A brief summary of the history of the French Plant Pathological Society, which was established February 11, 1914, through the efforts of Professor Mangin. The work of the society was greatly interrupted by the war. It is now renewing its activity and increasing its membership, which is 104. It is noted that two members have been elected to the National Academy of Science and two others elected deputies.—*C. L. Shear.*

914. Bardie, A. **Quelques notes sur la Physalis Alkekengi dans la Gironde.** [Notes concerning Physalis Alkekengi L.] Actes Soc. Linn. Bordeaux (Procès-verbaux) 69: 39–47. 1915–16. [Received May, 1920.]—After a brief description of the habitat of this species of *Physalis*, the author gives detailed information regarding the reputed pharmaceutical properties of the plant since the time of the ancient Greeks.—*W. H. Emig.*

915. Beringer, G. M. **Frank G. Ryan, memoir with portrait.** Amer. Jour. Pharm. 92: 371–376. 1920.

916. Blakeslee, A. F., Roland Thaxter, and William Trelease. **William Gilson Farlow, December 17, 1844–June 3, 1919.** Amer. Jour. Bot. 7: 173–181. *1 pl.* 1920.—The authors present a brief biographical sketch of Professor Farlow, which is followed by a list of his publications. [See also Bot. Absts. 6, Entries 947, 956, 963, 1463, and 1470.—*E. W. Sinnott.*

917. Bouchard, Georges. **Le grand naturaliste Canadien.** [The great Canadian naturalist.] Naturaliste Canadien 45: 114–115. Feb., 1919.—An appreciation of the late L'Abbé L. Provancher, naturalist and founder of Le Naturaliste Canadien.—*A. H. MacKay.*

918. Briquet, J. **Les collections botaniques du botaniste espagnol José Quer.** [The collections of the Spanish botanist José Quer.] Annuaire Conservatoire et Jard. Bot. Genève 20: 465–478. *4 fig.* 1919.—Quer was born at Perpignan, Jan. 26, 1695, and died at Madrid, Mar. 19, 1764. He collected in southern Europe and northern Africa and projected a flora of Spain. The first four volumes appeared from 1762 to 1764, but the fifth and sixth, in collaboration with Gomez de Ortega, not until 1784. Figure 1 is a portrait of Quer. There is a description of his herbarium now at the Delessert Herbarium.—*A. S. Hitchcock.*

919. Britten, James. **In memory of Edward Shearburn Marshall, 1859–1919.** Jour. Botany 58: 1–11. 1920.—Marshall was born March 7, 1858, and died Nov. 25, 1919. He received his university education at Oxford, and became a clergyman by profession.—It was probably while at Oxford that he became interested in plants. His first contribution to the Jour. Botany, of which he was later a leading supporter, was in 1885. Subsequently he became a prominent British botanist of keen critical judgment, more inclined perhaps to see differences than relationship and somewhat prone to over-confidence, but sound in the end. Though having a wide interest in flowering plants, he studied more especially *Saxifraga, Hieracium, Rubus, Euphrasia, Eriophila, Viola, Epilobium, Salicornia,* and *Carex.* Marshall was strongly opposed to the "lumping school" of taxonomists and resented the tossing aside by Bentham, Hooker and others as worthless critical field observation made by careful workers. His own work was usually based on abundant material. His name is associated with two plants, *Hieracium Marshallii* Linton and *Rubus Marshallii* Focke & Rogers. He published a Flora of Kent in 1889 and contributed the article on *Betula* to the Cambridge British Flora in 1914. He also published a supplement to the Flora of Somerset. Marshall had a wide acquaintance among British botanists and was a delightful companion. In 1911 he was elected an Honorary Fellow of the Botanical Society of Edinburgh. He was a vigorous collector, satisfied only with

the best of specimens, and using great care in their preparation. He was a careful writer, with a clear concise style, and exceedingly methodical.—*K. M. Wiegand.*

920. Britton, Elizabeth G., and others. **Resolutions upon the loss of the collections and library of M. Jules Cardot.** Bryologist 22: 87–88. 1919.

921. Church, A. H. **Brunfels and Fuchs.** Jour. Botany 57: 233–244. 1919.—Stimulated by the proposed issue of a second volume of the Cambridge British Flora, the writer queries whether the figures in the first volume were as nearly ideal as they might be. He is led to consider the work of Leonard Fuchs, "De Historia Stirpium," published in 1542. He pronounces this "the original standard for all subsequent volumes of illustrations of plants." Fuchs was a leading physician and professor, and a wealthy man. He employed several artists of note, and perhaps the best engraver of Strasburg, Vitus Rudolph Speckle. The volume comprises 519 folio drawings, with associated text, of plants growing in southern Germany. The first plates were rather crude, and some were copied. The later ones show a great advance both in drawing and engraving, and are elegant examples of the engraver's art. They compare most favorably with the best work done in modern times. The artists were probably designers, and were not botanists. They were little impressed by fine detail of structure, and were best at the artistic arrangement of large parts. The writer points out that Fuchs really built upon his predecessor, Otto Brunfels, whose volume stands as the first recognized work on scientific botany of the new era. Brunfels' illustrations, though not so numerous nor so elaborate as those of Fuchs were far more accurate as to detail. Brunfels was a poor man and probably made the drawings himself. Some of these were very poorly copied by Fuchs' illustrators in their early drawings. Brunfels was much ahead of his time in presenting detail, which he faithfully drew but did not understand. The writer cites many illustrations from both Fuchs and Brunfels to make clear the points in his argument. "The work of Brunfels and Fuchs covers the whole province of the fundamentals of botanical illustration." "The addition of special botanical details, as accurate drawings, or neat combination in a diagram of established convention, is again exemplified by Fuchs; while the clearness of line-reproduction expressed in the work of Speckle puts to shame modern methods of line process-work." The illustrations in Gerard and Parkinson are considered to have degenerated from the standards set by Brunfels and Fuchs.—*K. M. Wiegand.*

922. Cook, Mel T. **Byron David Halsted.** Bot. Gaz. 67: 169–170. *1 fig.* Feb., 1919.—A biographical sketch with portrait.

923. Demorlaine, J. **La nécessité d'un service forestier d'armée sous l'ancien régime. [The need for an army forest service.]** Rev. Eaux et Forêts 57: 229–230. 1919.—See Bot. Absts. 5, Entry 179.

924. [Dodge, B. O.] **Index to American mycological literature.** Mycologia 12: 112–114. 1920.

925. Doidge, Ethel M. **The rôle of bacteria in plant diseases.** [Presidential address, South African Assoc. Adv. Sci. Kingwilliamstown, July, 1919.] South African Jour. Sci. 16: 65–92. 1919.—See Bot. Absts. 5, Entry 2031.

926. Fitting, Hans. **Zur Jahrhundertfeier der Bonner Universität. Die Entwicklung der Naturwissenschaften an der Bonner Universität seit ihre Begrundung. Botanik. [The development of botany during the past century at the University of Bonn.]** Naturwissenschaften 7: 571–576. 1919.—This is a historical survey. Nees von Esenbeck, Sachs, Pfeffer, Hansteen, and Strasburger are among those who contributed to the prestige of botany at Bonn.—*Orton L. Clark.*

927. François, L. **Notice sur Achille Müntz.** Rev. Gén. Bot. 32: 5–14. *Portrait.* 1920.—An account of the researches of A. Müntz (1846–1917), which included investigations

of the sugars found in fungi and their relation to respiration; nitrification in the soil through the agency of living organisms; organized and soluble ferments; the rôle of ammonia in the nutrition of higher plants; the effect of light on assimilation; the relation of the composition of forage plants to the formation of milk sugar by animals; and the chemical changes occurring in the ripening of starchy and oleaginous seeds.—*L. W. Sharp.*

928. Fyson, P. F. **Editorial.** Jour. Indian Bot. 1: 1–2. Sept., 1919.—The *Journal of Indian Botany* has been started to provide a means of publishing botanical work done in India, which would not naturally find a home in existing botanical journals of that country, especially in branches other than floristic and agricultural botany. To be issued monthly, and to contain original matter and abstracts.—*C. S. Gager.*

929. Gershenfeld, Louis. **Galen, a sketch.** Jour. Amer. Pharm. Assoc. 9: 520–522. 1920.

930. Goebel, K. **Ernst Stahl zum Gedächtnis.** [In memory of Ernst Stahl.] Naturwissenschaften 8: 141–146. 1920.

931. Groves, James. **Cornelius Varley, 1781–1873.** Jour. Botany 58: 50–53. 1920. Varley's mother was probably a direct descendant from Oliver Cromwell. The immediate family showed strong artistic tendencies. Cornelius, unlike his brother, developed also a marked ability as an instrument maker, especially of optical instruments. The main reason for considering him as a botanist lies in his remarkable paper on *Chara* published in 1849 ("on *Chara vulgaris*," Trans. Microsc. Soc. 2: 93–104. 1849) before Alexander Braun's work appeared. In this he saw clearly many of the details of cellular construction that were later brought out by Braun.—*K. M. Wiegand.*

932. Guthrie, John D. **Early English forest regulations.** Jour. Forestry 18: 530–541. 1920.—Presents English forest customs and usages dating back to the 14th century. The personnel of a forest, its administration, grazing uses and silviculture are described.—*E. N. Munns.*

933. Holmes, E. M. **The manna of scripture.** Chem. and Druggist 92: 25–26. 1920.—The manna of Moses has been ascribed to various bushes or small trees, such as *Tamarix gallica*, var. *mannifera*, yielding saccharine exudations, of some value as food, for sweetening cakes, etc. It has also been supposed that it was of fungous origin, or a lichen,—perhaps *Lecanora esculenta*, var. *mannifera*. Swann, in his recent book "Fighting the slavedriver in central Africa," writes as follows (p. 116): "It was whilst passing through this district (the high plateau which separates Lakes Nyasa and Tanganyika), composed mostly of sandstone and granite, and occupied by the Amambwi tribe, that I was shown a very curious white substance very similar to porridge. It was found early in the morning before the sun rose. On examination it was found to possess all the characteristics of the manna . . . . of the Israelites. In appearance it resembled coriander seed, was white in color like hoar frost, sweet to the taste, melted in the sun and if kept over night was full of worms in the morning. It required to be baked if you intended to keep it for any length of time. It looked as if it were deposited on the ground in the night. The only suggestion I could think of was that it might be a mushroom spawn, as on the spot where it melted, tiny fungi sprung up the next night." Dr. Woreham, a medical missionary of this African district, confirms Swann's s tatements but says that this "manna" is of rare occurrence.—Because of the Great Rift valley, which extends from the Lebanons to the Cape of Good Hope and is evidently the bed of a formerly great river, it is fully possible for a cryptogamic plant to be found in widely separated locations in this valley where the conditions are suitable for its development. A possibility of identifying the manna of Scripture lies here, and an effort is being made to secure preserved specimens and samples of the soil where they are obtained.—*E. N. Gathercoal.*

934. Howard, L. O. **Recollections of the early days of the Biological Society.** Proc. Biol. Soc. Washington [D. C.] 32: 271–280. 1919.—Reminiscences and anecdotes of the Biological Society of Washington are related.—*J. C. Gilman.*

935. Huard, V.-A. **Le Naturaliste Canadien.** [**The Canadian Naturalist.**] Naturaliste Canadien **45**: 97–101. Jan., 1919.—An appeal to subscribers. Founded in 1868 by L'Abbé Provancher, the only French scientific periodical published by Canadian French, or in America, or possibly in any country outside France.—*A. H. MacKay.*

936. Huard, V.-A. **L'abbé Provancher.** [Continued from Naturaliste Canadien **45**: 17–18. 1918.] Naturaliste Canadien **45**: 134–138. 1919.—A biographical sketch with special reference to the history of Le Naturaliste Canadien. [To be continued.]—*A. H. MacKay.*

937. Jackson, B. Daydon. **Pritzel's "Index."** Jour. Roy. Hortic. Soc. **45**: 14–21. 1919. —A sketch of the life of Georg August Pritzel, together with an outline of a project to publish, under the auspices of the Royal Horticultural Society, a revision of his "Iconum Botanicarum Index Locupletissimus," completed in 1865 and now out of print. There is no printed record of the many excellent figures published during the last 53 years. The original Pritzel contained about 107,000 entries, and it is estimated that the new edition will include at least 125,000 additional entries. All botanical plates are to be cited under the names employed by those responsible for the plates. The pictures printed in such horticultural journals as Gardeners' Chronicle, the Garden, and their foreign equivalents, are to be quoted.—*J. K. Shaw.*

938. Kraemer, Henry. **Life and work of Charles Tanret.** Amer. Jour. Pharm. **91**: 265–270. 1919.—An account of the life activities of Charles Tanret, the French pharmacist, who died July 29, 1917. The author reviews Tanret's scientific achievements, including his studies on the active principles of ergot and pomegranate bark and the detection of albumin, peptones and alkaloids.—*Anton Hogstad, Jr.*

939. Kremers, Edward. **Professor Alexander Tschirch.** [Sketch with portrait.] Jour. Amer. Pharm Assoc. **9**: 359–360. 1920.

940. Leopold, Aldo. **Forestry of the prophets.** Jour. Forestry **18**: 412–419. 1920.—Excerpts from the Old Testament showing that some of the Jewish prophets had considerable knowledge of forests, and forest products.—*E. N. Munns.*

941. Lister, G. **Mycetozoa from Cornwall.** Jour. Botany **58**: 127–130. 1920.—See Bot. Absts. 6, Entry 791.

942. Maheux, George. **La protection des plants chez les Romains.** [**The protection of plants among the Romans.**] Naturaliste Canadien **45**: 146–157. 1919.—The author refers to Theophrastus' "History of plants," Varro's "*De re rustica*," Cato the Elder's "Treatise on agriculture," Virgil's "Georgics," Pliny the Elder's "Natural history," Columella's "Treatise on agriculture," and Palladius' works on the same subject; also to the "Voyage agricole chez les anciens," published in 1898 by l'abbé Beauredon. The subject is treated under three general subdivisions, cereals, legumes, and fruit trees.—*A. H. MacKay.*

943. Marshall, T. Dabney. **The work of an Alabama plant wizard.** Flower Grower **6**: 97. 1919.—The work of L. H. Read, of Deer Park, Alabama, is briefly described.—*W. N. Clute.*

944. Martin, George W. **An early American record of mushroom poisoning.** Mycologia **12**: 53–54. 1920.—Author presents a unique inscription on a tombstone dated 1695, which tells of two boys who died as a result of eating mushrooms.—*H. R. Rosen.*

945. Mattirolo, Oreste. **Sul pregiudizio, che i fichi secchi e le castagne secche o crude facciano sviluppare e crescere i pidocchi sul capo di chi li mangia.** [**Concerning the superstitious belief that dried figs and dried or raw chestnuts produce lice on the heads of those who eat these fruits.**] Nuovo Gior. Bot. Italiano **26**: 46–57. 1919.—Many people believe that the eating of figs and chestnuts causes the development of lice. This superstition is traceable to

the fact that members of the Acari are both plant and animal parasites. The eating of these minute insects together with the fruits neither affects the digestion nor does it engender lice on the heads of those who eat them.—*Ernst Artschwager.*

946. Montemartini, Luigi. **Rodolfo Farneti.** Revist. Pathol. Veg. 9: 121–125. 1919.—Rodolfo Farneti, "libero docente" of vegetable pathology in the Royal University of Pavia, died Jan. 18, 1919. While his field of observation was broad, he specialized along the lines of mycology and phytopathology. A list of his published work in these lines is given, with some comments.—*F. M. Blodgett.*

947. Murrill, W. A. **Dr. William Gilson Farlow.** Mycologia 11: 318. 1919.—A brief account of Dr. Farlow's life.—See also Bot. Absts. 6, Entries 916, 956, 963, 1463, and 1470.—*H. R. Rosen.*

948. Murrill, W. A. **Pier Andrea Saccardo.** Mycologia 12: 164. 1920.—A brief account of Saccardo's life.—*H. R. Rosen.*

949. Parish, S. B. **A supplementary bibliography of the southern California flora.** Bull. Southern California Acad. Sci. 19: 24–29. 1920.—The author completes to date a bibliography begun in the same journal (volumes 8 and 9). Southern California is understood to have as its northern limit Santa Barbara, Ventura, Kern, and Inyo counties.—*Roxana S. Ferris.*

950. Paterno, E. **Origini e sviluppo della crioscopia. [Origin and development of cryoscopy.]** Gaz. Chim. Italiana 49: 381–411. 1919.—See Bot. Absts. 5, Entry 2144.

951. Paul, David. **On the earlier study of fungi in Britain.** Trans. British Mycol. Soc. 6: 91–103. 1918.—See Bot. Absts. 4, Entry 1142.

952. Pearson, Wm. Hy. **William Hobson.** Bryologist 23: 36–37. 1920.—A brief note concerning the life and work of the brothers Edward and William Hobson with a request for further information about the latter.—*E. B. Chamberlain.*

953. Plitt, Charles C. **A short history of lichenology.** Bryologist 22: 77–85. 1919.—The author outlines the ideas current concerning lichens from the Greeks to the time of Linnaeus with some mention of the ancient uses of the plants. The development of systematic study after Linnaeus is sketched. Attention is given to historical views of the nature of lichens as plants, to the ideas concerning gonidia, sexuality, and to present-day views.—*Edward B. Chamberlain.*

954. Praeger, R. Ll. **Nathaniel Colgan.** Irish Nat. 28: 121–126. 1919.—Obituary notice of an amateur naturalist chiefly interested in botany. He edited the new edition of "Cybele Hibernica" (1898) and was author of "Flora of the County of Dublin" (1904). Portrait and list of publications.—*W. E. Praeger.*

955. Prain, D. **J. W. H. Trail, M.D., F.R.S.** Jour. Botany 57: 318–321. 1919.—James William Helenus Trail was born in Birsay, Scotland, March 4, 1851. His love of natural history was early apparent. Trail graduated from the University of Aberdeen in 1870, with honors, and then entered the faculty of medicine, not through interest in medicine but in order to obtain a further training in science. Here his record was also brilliant, but he laid the study of medicine quickly aside when the opportunity came to travel in the Amazon region. Following his return his observations were written up and published; and at the same time he completed his study in medicine. His accurate work suggested his appointment as government botanist in British Guiana, but the retirement of Professor Dickie, of Aberdeen, led to Trail's appointment in his place, and thus prevented the acceptance of the position in Guiana. At the age of 26 he took up the work at Aberdeen, which he continued until his recent death, forty-two sessions in all. Trail was not a fluent speaker, but a con-

vincing teacher. His skill in selecting matter and accuracy in presenting this to students made his classes models of pedagogy. As a leader of field-excursions he could have no superior. A well-equipped laboratory has been built up through his efforts. He was elected Fellow of the Linnaean Society in 1875, Fellow of the Royal Society in 1893, and president of the British Association in 1910. A capacity for business led to his being much in demand in connection with University affairs. After 1892 he was dean of the new faculty of science. Many other activities drew upon his time. He left endowment funds for the support of various local interests. These acts of generosity, however, represent but a small part of Trail's thoughtful and unobtrusive benevolence. The range of his knowledge and its accuracy were phenomenal. His sincerity and kindness, as well as his scholarship, compelled regard and esteem.—*K. M. Wiegand.*

956. Riddle, L. W. **William Gilson Farlow.** Rhodora **22**: 1–8. *Portrait.* 1920.—A biographic sketch of the late William Gilson Farlow, Professor of Cryptogamic Botany in Harvard University from 1879 to 1919. [See also Bot. Absts. 6, Entries 916, 947, 963, 1463, and 1470.]—*James P. Poole.*

957. Riviere, C. **Le jardin d'essai d'Alger.** [The experimental garden of Algiers.] Rev. Hortic. [Paris] **91**: 340–342. Sept., 1919.—This historical note on the founding and establishing of the experimental garden supplements, by adding numerous details, a previous discussion on the same topic (Rev. Hortic., June, 1919).—*E. J. Kraus.*

958. Roth, Filibert. **Great teacher of forestry retires.** Amer. Forestry **26**: 209–212. *1 portrait.* 1920.—An appreciation of Professor Emeritus B. E. Fernow, pioneer in forestry teaching and education.—*Chas. H. Otis.*

959. Small, James. **The application of botany in the utilization of medicinal plants.** Pharm. Jour. **103**: 199–201, 213–215, 248–250, 294–296. 1919.—A review is given of the botanical materia medica of Palaeolithic man, Neolithic man, the early Hindus, Chinese, Egyptians, Persians, Druids, Greeks, Romans and aboriginal Americans. Mention is made of the Chinese knowledge of Rhubarb as a purge in 2700 B. C., of the two kinds of Indian Hemp plants in 1200 B. C., and of the Chinese Royal Botanical Garden of 111 B. C.; also of the outstanding fact in all of this early materia medica of the prominent use of narcotics and stimulants with the probability that the use of Opium was known to Paleolithic man. The adoption by Western Europe of foreign drugs brought back by early explorers and especially through medical and botanical exploration is noted.—The introduction of medicinal plants into medical practice is described under the headings: Discovery, Recommendation, Experimentation, Secret Remedy Stage, Permanent exploitation. Under Permanent exploitation, reference is made to the full botanical description of the plant, its cultivation, the determination of its active principles and its economic production. In the chapter entitled Present applications, reference is made to present-day medical and botanical exploration under the auspices of national governments, scientific societies and manufacturing firms. Botanical gardens and drug farms, investigations in microscopic pharmacognosy, phytochemistry, ecology and genetics are discussed.—The last chapter is on Future applications, discussed under the headings: Discovery, Experimentation, Suggested organization and Suggested researches. Among the many suggestions made by the author are the following: (1) A [British] pharmaceutical research committee, with 25 per cent of its membership eminent botanists, who would have the influence necessary to secure facilities for work on medicinal plants in university and other institutions where the experimental plant-growing and plant-breeding would be under expert botanical control. (2) A quarterly journal or bulletin issued by this committee, to contain not only abstracts of completed researches, but some account of the progress of unfinished work.—Many examples and illustrations are introduced and scores of plant names are mentioned.—*E. N. Gathercoal.*

960. Smith, Annie Morrill. **Obituary** [of Miss Lura L. Perrine]. Bryologist **23**: 3. 1920.—A notice of Miss Perrine's life and work.—*E. B. Chamberlain.*

961. Stone, R. E. **Meeting of the Canadian Branch of the American Phytopathological Society.** Mycologia **12**: 43–45. 1920.—See Bot. Absts. 4, Entry 1366.

962. Swingle, Walter T. **More about Loureiro.** Amer. Bot. **26**: 28. 1920.—Additions and corrections for a longer article, which appeared in same journal, Nov., 1919.—*W. N. Clute.*

963. [Vines, S. H.] **William Gilson Farlow.** Ann. Botany **33**: 15–16. 1919.—See also Bot. Absts. 6, Entries 916, 947, 956, 1463, and 1470.

964. Wright, I. A. **The history of the cane sugar industry in the West Indies.** Louisiana Planter and Sugar Manufacturer **62**: 414–415. Ibid. **63**: 14–15, 108–109, 222–223, 237–239, 414–415. 1919.—The history is written from documents, mostly unpublished, that exist in the archives of the Indies, Seville, Spain. The development of the industry is traced from the first part of the sixteenth century.—*C. W. Edgerton.*

BOTANICAL EDUCATION

C. Stuart Gager, *Editor*
Alfred Gundersen, *Assistant Editor*

965. Anonymous. **The annual meeting, Science Masters' Association. Biology in the school science course.** School Sci. Rev. [London] **1**: 79–84. 1919.—Brief discussions by a number of teachers.

966. Anonymous. **Descriptive guide to the grounds, buildings and collections** [New York Bot. Gard.]. Bull. New York Bot. Gard. **10**: 89–212. *Pl. 199–226. 1 map.* 1920.

967. Anonymous. **Naturschutz.** [Preservation of natural sites.] Forstwiss. Centralbl. **41**: 333–336. 1919.—See Bot. Absts. 6, Entry 1015.

968. Anonymous. **A great artist of nature.** [Rev. of: Thorburn, Archibald. **A naturalist's sketch book.** Longmans, Green and Co.: London, 1919.] Nature **104**: 432–433. 1920. —"This century has produced two great artists of nature –namely, Joseph Wolf and Archibald Thorburn." The volume contains 60 plates, chiefly of birds and other animals, but also some of plant life.—*O. A. Stevens.*

969. Anonymous. [Rev. of: Duncan, F. Martin. **Insect pests and plant diseases in the vegetable and fruit garden.**] Nature **104**: 467. 1920.

970. Anonymous. **The study of the familiar.** [Rev. of: Downing, E. R. **A source book of biological nature-study.**] Nature **104**: 465–466. 1920.

971. Britton, N. L. **Report of the Secretary and Director-in-Chief** [New York Bot. Gard.] **for the year 1919.** Bull. New York Bot. Gard. **10**: 213–306. 1920.—Contains a general report and special reports of assistants, curators, etc., as well as the financial reports.—*E. A. Bessey.*

972. Durrant, R. G. **Ions in solution.** School Sci. Rev. [London] **1**: 7–11. 1919.—Arrhenius recently said ionic dissociation theory holds field against all others. Its importance is such that reference to it should be made in regular elementary laboratory work.—*A. Gundersen.*

973. Evans, E. Price. **Local ecology as a basis of school botany.** School. Sci. Rev. [London] **1**: 113–122. June, 1919.—The physiographic ecology of a region near Durham, England, is presented as a possible basis for the botany courses of the secondary schools. The region affords many different types of vegetation. The presentation of the subject is somewhat advanced.—*Norman Taylor.*

974. Owen, J. H. **School natural history societies. I. Felsted School Scientific Society.** School Sci. Rev. [London] 1: 42-44. 1919.—This society was founded in 1877 and has sections in botany, geology, ornithology and other subjects.—*A. Gundersen.*

975. Whitney, W. **Science of plant life.** [Rev. of: Transeau, E. N. **Science of plant life.** *336 p., 194 fig.* World Book Co.: Yonkers-on-Hudson, New York, 1919.] Plant World 22: 248-249. 1919.

CYTOLOGY

Gilbert M. Smith, *Editor*
G. S. Bryan, *Assistant Editor*

976. Adams, J. F. **Sexual fusions and development of the sexual organs in the Peridermiums.** Pennsylvania Agric. Exp. Sta. Bull. 160: 31-76. *5 pl.* (1919.) 1920.— See Bot. Absts. 6, Entry 1214.

977. Allen, Charles E. **The basis of sex inheritance in Sphaerocarpos.** Proc. Amer. Phil. Soc. 58: 289-316. *28 fig.* 1919.—Plants of *Sphaerocarpos Donnellii* were successfully cultivated under greenhouse conditions in pots kept in a Wardian case. Although modifications in the form of the thallus occur when plants are grown under cultivation, the changes brought about by environmental conditions do not bring about any loss of function on the part of the sex organs or of the gametes. Fertilization was easily secured and sporophytes were formed in abundance. Spores of *S. Donnellii* invariably remained united in tetrads. The differences which distinguish female from male plants result from differences in the spores that are to give rise to them. Of the spores formed by the division of a single mother cell, two bear female potentialities and two male potentialities. There was found to be no marked difference between female producing and male producing spores in their capacity for germination, but a difference in the rate of germination was noted. Cells of the female gametophyte gave eight chromosomes, of which one is much longer and thicker than any of the others; the remaining seven differ in length among themselves. Seven of the chromosomes of the male also vary in length among themselves and seem to correspond to the seven smaller ones of the female; the eighth chromosome of the male is very small. Of the four nuclei formed in the spore mother cell, two sister nuclei and spores receive a large chromosome each. Since the large chromosome is always present in the cells of the female and never in those of the male, a spore receiving a large chromosome necessarily develops into a female gametophyte; a spore receiving a small chromosome develops into a male gametophyte. The sex chromosomes of *Sphaerocarpos* are compared to the X and Y chromosomes of animals, the female possessing in this case an X element, and the male a Y element. The size differences between plants of opposite sex are determined by the difference in chromosome bulk which influences the rate of cell growth and cell division. A second category of sex characters results from other, still unknown, specific peculiarities of the sex chromosomes. [See also Bot. Absts. 4, Entry 486.]—*Wanda Weniger.*

978. Bezssonoff. **Sur l'obtention expérimentale de la sexualité chez les champignons et orientée sur la structure typique du plasma sexuel. [On the initiation of sexual reproduction in fungi by experimental means, and the existence of a cytoplasmic structure peculiar to the sexual process.]** Compt. Rend. Acad. Sci. Paris 170: 288-290. 1920.—See Bot. Absts. 6, Entry 1344.

979. Bryan, Geo. S. **The fusion of the ventral canal cell and egg in Sphagnum subsecundum.** Amer. Jour. Bot. 7: 223-230. *2 pl.* 1920.—Author reviews briefly the literature dealing with the archegonium of *Sphagnum*, with special reference to the egg and the ventral canal cell. The ventral canal cell regularly persists and is very variable in size. Its protoplast and that of the egg round off and the wall between them disintegrates, the two cells thus lying side by side in the venter of the archegonium. In a number of cases, in material

collected in December, a fusion was discovered not only between these two protoplasts but also between their nuclei. The behavior of the chromatin could not be clearly seen, but the chromatic material from the two nuclei seemed to be more or less intermingled. Cases were found where the ventral canal cell had disintegrated; in other instances the egg had disintegrated and the ventral canal cell remained functional.—*E. W. Sinnott.*

980. Carter, Nellie. **Studies on the chloroplastids of Desmids III. X. The chloroplasts of Cosmarim.** Ann. Botany 34: 265–286. 1920.—See Bot. Absts. 6, Entry 1191.

981. Conklin, E. G. **The mechanism of evolution.** Sci. Monthly 10: 496–515. 1920.—See Bot. Absts. 5, Entry 1987.

982. Dangeard, Pierre. **Sur l'évolution du système vacuolaire chez les Gymnospermes. [The development of the vacuoles in Gymnosperms.]** Compt. Rend. Acad. Sci. Paris 170: 474–477. *8 fig.* 1920.—*Larix europea, Taxus baccata,* and *Gingko biloba* were studied in living condition by means of intravital stains. Vacuomes, spheromes and plastidomes may be found in the same living cell. An especial study is made of the vacuome in which metachromatin exists in young cells as grains which enlarge and fuse into a network which may be spread throughout the cytoplasm. From this network are later formed the vacuoles.—*C. H. and W. K. Farr.*

983. Dangeard, P.-A. **Plastidome, vacuome et sphérome dans Selaginella Kraussiana. [Plastidomes, vacuomes and spheromes of Selaginella Kraussiana.]** Compt. Rend. Acad. Sci. Paris 170: 301–306. *1 pl.* 1920.—The author, as in earlier writings, distinguishes three types of structures which are usually referred to as mitochondria or chondriosomes: namely, plastidomes, vacuomes and spheromes. All are stained black by iron haematoxylin. *Selaginella* affords excellent material for the study because of the few large chloroplasts. The chloroplast arises from a small band lying appressed to the nuclear membrane, which stains deeply with iron haematoxylin and divides just prior to cell-division. Successive divisions of this band, which is called the "mitoplast," give rise to several chloroplasts. Mitoplasts are found in meristematic tissue, young leaves, cortex of the stem, vascular tissue, root tips, and in the primordia of sporangia.—In the vacuoles are metachromatic corpuscles which compose the vacuome. They react to the Regaud stain in the same way as do the mitoplasts. As the vacuoles fuse in the maturing of the cells the vacuomes may remain single or group themselves into chains or ribbons. They, however, always remain within the vacuole though the vacuolar membrane may not, in some instances, be readily distinguishable.—The spheromes are composed of ordinary microsomes isolated or associated in pairs or even chains. They are never enclosed within a vacuole.—The cytoplasm of old cells is differentiated into fibrils along which the microsomes migrate. These fibrils may, therefore, appear to be of the nature of mitochrondria and have been referred to erroneously as chondrioconts. The author is in favor of discarding the terms mitochondria, chondriosomes, chondrioconts, and chondriomites, and substituting the terms vacuomes (metachromes and metachromatic corpuscles), plastidomes (mitoplasts and plastids), spheromes (microsomes) and fibrils of the cytoplasm, which he considers have more precise significance.—*C. H. and W. K. Farr.*

984. Emberger, L. **Évolution du chrondriome chez les cryptogames vasculaires. [The development of chondriosomes in vascular cryptogams.]** Compt. Rend. Acad. Sci. Paris 170: 282–284. *5 fig.* 1920.—Two types of mitochondria are found in the root of *Athyrium Filix-femina,* which differ slightly in the intensity of their staining reaction and in their size. One gives rise to plastids, the function of the other is unknown. The author prefers to apply the term mitochondria to the plastid-forming bodies as well as to those structures whose function is at present unknown.—*C. H. and W. K. Farr.*

985. Emberger, L. **Évolution du chrondriome dans la formation du sporange chez les fougères. [The history of the chondriosome during the formation of the sporangium of the ferns.]** Compt. Rend. Acad. Sci. Paris 170: 469–471. *7 fig.* 1920.—In young sporangia of

Scolopendrium vulgare, and *Asplenium Ruta-muraria* are found lenticular and rod-shaped chloroplasts, chondriocontes and granular mitochondria. In the spore mother-cells the chloroplasts undergo transformation into chondriocontes which stain more deeply in later stages. Chondriomites are also present at this stage. The chondriocontes dissociate into mitochondrial granules before the reduction division begins, which persist throughout these divisions as granular chondriosomes. In the spore they give rise to chloroplasts and mitochondrial bodies of various forms. There thus occurs during spore-formation a mitochondrial reversibility.—*C. H. and W. K. Farr.*

986. Evans, Arthur T. **Embryo sac and embryo of Pentstemon secundiflorus.** Bot. Gaz. 67: 427–437. *1 pl.* 1919.—See Bot. Absts. 4, Entry 996.

987. Falqui, G. **Il processo di fecondazione nella Thelisia planifolia (Mill) Mattei. [Fertilization in Thelisia planifolia (Mill) Mattei.]** Nuovo Gior. Bot. Italiano 26: 221–234. 1919. —Observations show that *Thelisia planifolia* is malacophilous and reproduces asexually by means of bubils, which germinate in the fall and give rise to new plants.—*Ernst Artschwager.*

988. Foster, Nathan. **Colloids and living phenomena.** Sci. Monthly 9: 465–473. *9 fig.* 1919.—See Bot. Absts. 4, Entry 1396.

989. Gard, Médéric. **Division chez Euglena limosa Gard. [The cell-division of Euglena limosa Gard.]** Compt. Rend. Acad. Sci. Paris 170: 291–292. 1920. Cytokinesis in this species is by internal cell-division rather than by a simple longitudinal splitting. The 4, 8, 16 or even 32 daughter cells remain as irregular masses within the membrane of the old mother cell. They may be arranged in either one or two planes, and each contain a nucleus, a primitive chloroplast, some pyrenoids, and much starch.—*C. H. and W. K. Farr.*

990. Graham, Margaret. **Centrosomes in fertilization stages of Preissia quadrata (Scop.) Nees.** Ann. Botany 32: 415–420. *Pl. 10.* 1918.—See Bot. Absts. 4, Entry 1037.

991. Guilliermond, A. **Sur les éléments figurés du cytoplasme. [The structural elements of the cytoplasm.]** Compt. Rend. Acad. Sci. Paris 170: 612–615. *5 fig.* 1920. Bodies of mitochondrial form are described in the leaves of *Iris germanica.* These bodies swell, anastomose and form a network which finally becomes transformed into vacuoles. The author disagrees with Dangeard, contending that these bodies are not metachromatic in nature and that they differ in their development and in their microchemical reactions from the chondriosomes of animals. However, there are two types of mitochondria in *Iris germanica;* chondriocontes which assimilate starch in young leaves and later form plastids, and mitochondria of a non-assimilating nature. Besides these bodies there are small globules, probably lipoid in nature, which have nothing in common with chondriosomes.—*C. H. and W. K. Farr.*

992. Guilliermond, A. **Sur l'évolution du chondriome dans la cellule végétale. [The evolution of the chondriome in the vegetable cell.]** Compt. Rend. Acad. Sci. Paris 170: 194–197. *4 fig.* 1920.—In the study of the root of pumpkin (*Cucurbita pepo*) it is found that the chondriocontes produce composite grains of starch. The granular mitochondria in the same cells do not seem to perform this function although they appear to be morphologically and microchemically identical. A similar physiological differentiation occurs in the perianth of the tulip. In the white variety of tulips (*Tulipa* sp.) the chondriocontes stain more heavily than the granular mitochondria. In the yellow varieties the chondriocontes produce xanthophyll.—*C. H. and W. K. Farr.*

993. Hegner, Robert W. **The relations between nuclear number, chromatin mass, cytoplasmic mass and shell characteristics in four species of the genus Arcella.** Jour. Exp. Zoöl. 30: 1–95. *47 fig.* Jan. 5, 1920.—See Bot. Absts. 4, Entry 602.

994. Hegner, Robert W. **The effects of environmental factors upon the heritable characteristics of Arcella dentata and A. polypora.** Jour. Exp. Zool. 29: 427–441. *7 fig.* Nov. 20, 1919.—See Bot. Absts. 4, Entry 601.

995. Jones, D. F. **Selective fertilization in pollen mixtures.** Proc. Nation. Acad. Sci. U. S. 6: 66–70. *1 table.* 1920.—See Bot. Absts. 6, Entry 1700.

996. Keene, M. Lucille. **Studies of zygospore formation in Phycomyces nitens Kunze.** Trans. Wisconsin Acad. Sci. 19: 1196–1219. *3 pl. 17 fig.* 1919.—See Bot. Absts. 5, Entry 1950.

997. Mangenot, G. **Sur l'évolution du chondriome et des plastes chez les Fucacées. [The evolution of chondriomes and plastids in the Fucaceae.]** Compt. Rend. Acad. Sci. Paris 170: 200–201. *1 fig.* 1920.—Mitochondria and small phaeoplasts are found in all stages of the development of the oogonium and the formation of the oosphere, and also in the fertilized egg and the embryo. It thus appears that the phaeoplasts persist throughout the entire life-cycle in *Fucus*, although in young tissues and reproductive organs they are smaller and more sensitive to reagents. Fucosane is present at all stages except, perhaps, during the early development of the oogonium.—*C. H. and W. K. Farr.*

998. Mascre, M. **Sur le rôle de l'assise nourricière du pollen. [The rôle of the tapetum in pollen.]** Compt. Rend. Acad. Sci. Paris 168: 1120–1122. *4 fig.* 1919.—See Bot. Absts. 5, Entry 1898.

999. Mirande, Robert. **Sur le carmin aluné et son emploi, combiné avec celui du vert d'iode, en histologie végétale. [Carmine-alum and its use as a counter stain with iodine green.]** Compt. Rend. Acad. Sci. Paris 170: 197–199. 1920.—The author finds that carmine-alum is not a stain for cellulose but stains pectic bodies. This conclusion is based upon the failure of carmine-alum to stain either cellulose fibers, such as those of cotton, or tissues from the cell-walls from which pectic materials have been extracted. On the other hand it does stain macerated portions of carrot or filaments of certain algae, such as *Cladophora* and the Siphonales. The author also holds that the staining of delignified tissues by iodine-green is to be attributed to the presence of pectic substances.—*C. H. and W. K. Farr.*

1000. Moreau, Fernand. **Notions de technique microscopique.—Application à l'étude des champignons. [Rudiments of microscopical technique. Its application to the study of fungi.]** Bull. Trimest. Soc. Mycol. France 34: 137–191. *35 fig.* 1919.—See Bot. Absts. 4, Entry 1131.

1001. O'Neal, Claude E. **Microsporogenesis in Datura Stramonium.** Bull. Torrey Bot. Club 47: 231–241. *2 pl.* 1920.—In *Datura Stramonium*, a favorable plant for cytological investigation, the bivalent chromosomes are cut from the spirem thread as loops, which may take on twisted forms, circles, or the U-shape. The bivalents are twelve in number and retain their individuality very strikingly until the telophase of the second division. No physical basis was found for occurrence of mutants nor for the Mendelian characters studied by other workers.—*P. A. Munz.*

1002. Parmenter, Charles L. **The chromosomes of parthenogenetic frogs.** Jour. Gen. Physiol. 2: 205–206. Jan. 20, 1920.—See Bot. Absts. 4, Entry 694.

1003. Parmenter, Charles L. **Chromosome number and pairs in the somatic mitoses of Ambystoma tigrinum.** Jour. Morph. 33: 169–249. *9 pl.* Dec. 20, 1919.—See Bot. Absts. 4, Entry 693.

1004. Smith, Bertram G. **The individuality of the germ-nuclei during the cleavage of the egg of Cryptobranchus allegheniensis.** Biol. Bull. 37: 246–286. *9 pl.* Oct., 1919.—See Bot. Absts. 4, Entry 771.

1005. Stevens, Neil E. **The development of the endosperm in Vaccinium corymbosum.** Bull. Torrey Bot. Club 46: 465–468. *4 fig.* 1919.—See Bot. Absts. 4, Entry 991.

1006. Stomps, Theo. J. **Gigas-mutation mit und ohne Verdoppelung der Chromosomenzahl.** [Gigas mutation with and without doubling of the chromosome number.] Zeitschr. indukt. Abstamm. Vererb. 21: 65–90. *3 pl., 4 fig.* July, 1919.—See Bot. Absts. 4, Entry 778.

1007. Stork, Harvey E. **Studies in the genus Taraxacum.** Bull. Torrey Bot. Club 47: 199–210. *2 pl.* 1920.—See Bot. Absts. 6, Entry 1770.

1008. Tischler, G. **Untersuchungen über den anatomischen Bau der Staub- und Fruchtblätter bei Lythrum Salicaria mit Beziehung auf das Illegitimitätsproblem.** [Studies of the anatomical structure of the stamens and carpels in Lythrum Salicaria with reference to the problem of illegitimacy.] Flora 11, 12 (Festschrift Stahl): 162–192. 1918.—See Bot. Absts. 4, Entry 788.

1009. Tower, W. L. **The mechanism of evolution in Leptinotarsa.** Carnegie Inst. Washington Publ. 263. *viii + 384 p., 19 pl., 161 fig.* 1918.—See Bot. Absts. 4, Entry 794.

1010. Woodburn, William L. **Preliminary notes on the embryology of Reboulia hemisphaerica.** Bull. Torrey Bot. Club 46: 461–464. *Pl. 19.* 1919.—See Bot. Absts. 4, Entry 1045.

FOREST BOTANY AND FORESTRY

Raphael Zon, *Editor*
J. V. Hofmann, *Assistant Editor*

1011. Acosta, Celsa. **Colección de maderas cubanas.** [Collection of Cuban woods.] Revist. Agric. Com. y Trab. 3: 55. 1920.—The Agric. Exp. Sta. of Cuba is said to have a nearly complete collection of the woods (about 500) of Cuba. Thirteen of these are described in this article as to specific weight and common uses.—*F. M. Blodgett.*

1012 Algan, H. [Rev. of: Huffel, G. **Economie forestière.** [Forest economy.] Vol. II, 2nd ed. *502 p., 131 fig.* 1919.] Bull Trimest. Soc. Forest. Franche-Comté et Belfort 13: 170–176. 1920.

1013. Anonymous. **Délits forestiers au XVIII^e siècle.** [Forest trespasses in the eighteenth century.] Bull. Trimest. Soc. Forest. Franche-Comté et Belfort 13: 168–170. 1920.—A study of the court records of Luxeuil between 1730 and 1760 indicates that forest trespasses in the eighteenth century differed remarkably little from those of today. Judgments were rendered in accordance with the celebrated ordinance of 1669, the severity of which was, however, considerably tempered in actual practice.—*S. T. Dana.*

1014. Anonymous. **La légende de Dévoluy.** [The legend of Devoluy.] Rev. Eaux et Forêts 58: 66–68. 1920.—The canton of Devoluy has been cited by numerous authors as a classic example of the disastrous results of deforestation, which they assume to have taken place toward the end of the eighteenth century, at about the time of the French Revolution. A careful study by M. Philippe Arbos has shown that this is not the case; that the deforestation of the canton (if, indeed, it was ever wooded) dates back at least to the end of the seventeenth century; and that erosion was active as far back as 1458. The canton does not appear to have suffered so severely as some of its neighbors. It has decreased less in population, agriculture has picked up somewhat, and the number of stock in relation to the population has increased considerably.—*S. T. Dana.*

1015. Anonymous. **Naturschutz.** [Preservation of natural sites.] Forstwiss. Centralbl. 41: 333–336. 1919.—There is danger, lest, with the extensive cultivation of moor and waste

lands now under way, certain wild sites of great aesthetic and scientific value may be destroyed. Preservation of some of the moors is of especial importance for research in zoology, botany, and geology. Steps have already been taken to reserve from cultivation or afforestation some areas of particular scientific interest, such as two moors containing the dwarf birch (a relic of the ice-age), and various other small moors. Some other waste lands should also be preserved in their wild state—notably the "pontine hills," which have a steppe flora left from the ice-age, composed of such species as *Stipa pennata, S. capillata, Adonis vernalis, Prunus fruticosa, Coronilla varia* and *Astragalus*. These areas are so small in relation to the total area of moor and waste land that no economic loss will result from their reservation.—*W. N. Sparhawk.*

1016. Anonymous. **Production de bois après guerre.** [Wood production after the war.] Bull. Trimest. Soc. Forest. Franche-Comté et Belfort 13: 162–165. 1920.—A recent report (reprinted in full) by M. Dabat, Director-General of Waters and Forests, emphasizes the urgent need for the increased production of saw timber. In order to relieve the present situation as quickly as possible he suggests the development of transportation facilities in the less accessible forests and the utilization of the enormous forest resources of the French colonies. The latter involves the education of consumers in regard to the technical qualities of colonial woods, standardization of nomenclature, and revision of the tariff so that the more common colonial woods will not be taxed at the same rate as the more precious ones. Measures which will not yield tangible results for some time include lengthening the rotation of coppice stands; maintaining a larger number of reserves in coppice under standards; converting coppice under standards into high forest; converting hardwood coppice of poor yield into coniferous stands, particularly in mountainous regions and on poor soils; reforestation of unproductive lands; and the purchase of forests by the State, communities, and public service corporations with a view to managing them for the production of saw timber. M. Dabat also urges that the State assist private owners in the handling of their forests; that a service be created for the study of forest statistics and forest economics, as well as of the technical qualities and uses of native, colonial, and foreign woods; and that forest experiment stations be organized under the direction of the National School of Waters and Forests.—Nothing but commendation can be given to the program proposed by M. Dabat. But to carry out such a program and to practice the intensive silviculture which it contemplates, requires men as well as good intentions. It will therefore remain merely a dead letter if the administration persists in its present tendency to decrease, rather than to increase, the forest personnel.—*S. T. Dana.*

1017. Anonymous. **Skovenes Udbytte 1918–1919.** [Total receipts and amount cut in the forests, 1918–19, Denmark.] Dansk Skovforenings Tidsskr. 5: 135–138. 1920.—The total cut from the Danish State forests during the fiscal year 1918–19 is given as 268,948 cubic meters of material; about 20 per cent above the average cut. The total net receipts amounted to 4,318,341 crowns. The total forest area is 57,118 hectares and of this the non-producing area 17,439 hectares. The net receipts for the total forest area is given as 72.45 crowns per hectare; in some cases this was as high as 329.27 crowns. On the basis of the valuation four working circles yielded above 15 per cent interest, three above 10 per cent and eight above 6 per cent; there being in all twenty circles in the producing forest area. (One hectare is 2.47 acres and one crown usually 28 cents.)—*J. A. Larsen.*

1018. Boas, L. H. **The possibilities of paper making in Australia.** Australian Forest. Jour. 3: 106–107. 1920.—A plea for a careful study of the pulp and paper industry and its establishment in Australia.—*C. F. Korstian.*

1019. Boas, L. H. **Some lines of forest product research in Australia.** Australian Forest. Jour. 3: 75–77. 1920.—The author believes that the most fundamental line of forest research needed in Australia today is a complete investigation of the mechanical properties of all timbers likely to be of commercial value.—*C. F. Korstian.*

1020. Buffault, Pierre. **L'évolution forestiére, à propos de la réorganization intérieure du service des eaux et forêts. [The evolution of the forester.]** Rev. Eaux et Forêts **58:** 57–60. 1920.—Forest officers should not confine themselves to the management of the public forests and the supervision of fishing. It is of constantly increasing importance that they should also assist private owners and communities in the handling of their forest lands; secure at least approximate information regarding the resources of those forests not submitted to the forest régime; keep more closely in touch with market conditions and the wood-using industries; and encourage the development of fish culture. These functions are already being exercised by a number of foresters on their own initiative with excellent results, and should be taken into consideration in connection with the proposed reorganization of the forest service. —*S. T. Dana.*

1021. Cannon, D. **Le Douglas. [Douglas fir.]** Rev. Eaux et Forêts **58:** 80. 1920.—Douglas fir is not particularly exacting in its demands on soil fertility and prefers siliceous to clayey, and especially to calcareous, soils. As a general rule exotics should be planted on the best available sites and given considerable attention, particularly when young.—*S. T. Dana.*

1022. Cardot, E. **La reconstitution forestiêre. [Forest reconstruction.]** Rev. Eaux et Forêts **58:** 89–92. 1920.—Extracts are given from the preface to "Études sur l'Aménagement des Forêts," by L. Tassy, written shortly after the Franco-Prussian war. The principal conclusions to be drawn from these extracts are that the national forests should be improved (notably by the conversion of coppice into high forest) and enlarged, and that adequate appropriation for the work should be made. These conclusions are equally applicable today in considering the problem of repairing the damages to French forests caused by the recent war.—*S. T. Dana.*

1023. Curtis, Otis F. **The upward translocation of food in woody plants. II. Is there normally an upward transfer of storage foods from the roots of trunk to the growing shoots?** Amer. Jour. Bot. **7:** 286–293. 1920.—See Bot. Absts. 6, Entry 1310.

1024. de la Hamelinaye, H. **Valeur d'avenir des baliveaux. [Future value of reserves.]** Rev. Eaux et Forêts **58:** 37–39. 1920.—The future value of reserves in coppice under standards is of great importance in evaluating the damages in areas devastated by the war. The value of trees of the same age in stands handled under the same rotation varies considerably according to the fertility of the site and the vigor of the trees. A detailed example is given of the method of calculation used by the author.—*S. T. Dana.*

1025. Gill, Walter. **Annual progress report upon state forest administration in South Australia for the year ended June 30, 1919.** *12 p., 6 pl., 2 maps.* Woods and Forests Dept. South Australia, 1919.—This is the regular administrative report of the Department for the period mentioned. It is reported that, of 392,860 trees planted, an average of 90.25 per cent were alive at the close of the year, the greater part being eucalypts and pines. *Pinus ponderosa* was planted in the Second Valley Forest, with a notable survival. The year showed an excess of receipts over expenditures.—*C. F. Korstian.*

1026. Guyot, Ch. **Deux devises de politique forestière. [Two schools of forest policy.]** Rev. Eaux et Forêts **58:** 25–28. 1920.—In a recent article in the same serial, M. Raux advocated the public control of private cuttings. Under pretext of conserving the public interest he would destroy, without compensation and at the expense of the owner, the very essence of private property, namely, the right of the owner to dispose of his forest as he sees fit. The days when kings exercised complete control over the property of their subjects are past. Today the citizen in France is regarded as capable of managing his own affairs. Whenever the public interest demands the placing of certain restrictions on the right of property, these restrictions must be accompanied by just compensation. Such control as M. Raux suggests would be vigorously opposed by private owners. Many of these already manage their forest

lands as well as the State, and the great majority are ready to follow voluntarily the example set by the public forests. Private owners are not responsible for their failure so far to take advantage of the law of July 2, 1913, permitting them to place their lands under the technical direction of the State. The regulations recently issued providing for the execution of this law will make it possible for all who care to do so to take advantage of it.—The unfortunate lowering in 1906 of the penalties for forest trespasses was primarily the work of a politician of the "authoritative" school, and cannot be charged to the advocates of a "liberal" forest policy. To withdraw the control over fishing bestowed upon the Administration of Waters and Forests in 1896, as proposed by M. Raux in order to make available a larger personnel for the carrying into effect of State control of private lands, would be a step in the wrong direction.—*S. T. Dana.*

1027. Guyot, Ch. **Jurisprudence. [Legal matters.]** Rev. Eaux et Forêts **58:** 9–14. 1920.—Discusses the application of certain provisions of the Code Forestier and of the law of April 7, 1851, to the clearing of land in which both the Forest Service and the Engineer Corps are interested. [See also next following Entry, 1028.]—*S. T. Dana.*

1028. Guyot, Ch. **Jurisprudence. [Legal matters.]** Rev. Eaux et Forêts **58:** 40–41. 1920.—A forest owner is responsible for damage done by rabbits to neighboring property when he has not taken sufficient measures to restrict the rabbits in his forest to a normal number. [See also next preceding Entry, 1027.]—*S. T. Dana.*

1029. Haugh, L. A. **Barkens likenbevoksning som udtryk for bögens vaekst. [Development of lichens on the bark of beech an index to growth.]** Dansk Skovforenings Tidsskr. **5:** 86–91. *1 pl.* 1920.—The author quotes O. Gallöe in saying that the development of lichens in beech forests depends largely upon the amount of available light in late winter and spring, that growth of lichens is largely absent from young beeches which hold their dead leaves over winter, and that soil rich in organic mould and earthworms does not favor the growth of lichens on the ground because of the constant turning over of the leaves, etc. The author states his own conclusions in saying that the optimum sites for the growth of beech are poor in lichen growth because the trees grow rapidly thereby shedding the outer layers of bark often, and because the denser stands allow insufficient light. In an ordinary forest the slower growing trees carry more lichens.—*J. A. Larsen.*

1030. Hickel. **Le douglas en France. [Douglas fir in France.]** Rev. Eaux et Forêts **58:** 5–8. 1920.—Douglas fir (the "green" variety) is less exacting in its soil requirements than indicated by Hubault in a previous issue of the same serial. It has no aversion to calcareous soils, does not suffer from late spring frosts, but will stand neither overhead shade nor the competition of herbaceos vegetation. It does best in western France, but thrives in many other parts of the country. Few species, and certainly no native one, can rival it in rate of growth. It is reproduced more easily than Scotch pine, forms denser stands, and produces a superior wood. It should be tried out in the reforestation of devastated areas.—*S. T. Dana.*

1031. Jagerschmidt, J. **L'exploitation des coupes en regie en Alsace et en Lorraine. [Logging by the forest administration in Alsace and Lorraine.]** Rev. Eaux et Forêts **58:** 29–36. 1920.—Logging by the forest adminstration has been the rule for many years in Alsace and Lorraine, in forests submitted to the forest régime. It has given excellent results from a financial point of view, by doing away with middlemen, and has reduced trespasses by making it possible for local residents to obtain small quantities of sawtimber and fuel at reasonable prices. A somewhat detailed account is given of the handling of woods labor, the keeping of accounts, and the making of sales.—*S. T. Dana.*

1032. Jones, Owen. **Soil fertility: Can it be preserved in Australian forests?** Australian Forest. Jour. **3:** 71–72. 1920.—The author offers three proposals: (1) Prevent of forest fires. (2) Underplant eucalypts with some shade-enduring species to act as a soil cover, and inci-

dentally to clean and force them up. (3) Confine eucalypts to areas where soil and climatic conditions are most favorable utilizing poor areas for species better calculated to preserve or improve soil fertility. [See also Bot. Absts. 6, Entry 1044.]—*C. F. Korstian.*

1033. Kashyap, S. R. **Abnormal number of needles in the spurs of Pinus longifolia.** Jour. Indian Bot. 1: 115–119. 1919.—See Bot. Absts. 5, Entry 1894.

1034. Kreitmann, L. **La conversion de la forêt domaniale de Montiers-sur-Saulx. [The conversion of the national forest of Montiers-sur-Saulx.]** Rev. Eaux et Forêts 58: 93–99. 1920. —Prior to 1868 the national forest of Montiers-sur-Saulx was handled as coppice under standards, with a rotation of 25 to 30 years. In that year plans were made to improve the quality and yield of the stand by converting it into high forest. These plans were not carried out, however, and the forest is now in a deplorable condition, with few trees suitable for the production of satisfactory standards. If the forest is not to be completely ruined it is necessary that steps be taken at once to convert it into high forest, for which it is preeminenlty suited both by the quality of the soil and by the value of the products that it can produce. A rotation of 112 years should be used and preference should be given to beech, which does remarkably well here. In some cases artificial reforestation will be necessary for the establishment of a satisfactory stand.—*S. T. Dana.*

1035. Lecomte, Henri. **Atlas des bois de l'Indo-Chine. [Atlas of Indo-Chinese woods.]** [Author's Abstract.] Compt. Rend. Acad. Sci. Paris 170: 162–263. 1920.

1036. Lescuyer, Pierre. **Quelques reflexions sur le calcul des pertes d'avenir. [The calculation of future losses.]** Bull. Trimest. Soc. Forest. Franche-Comte et Belfort 13: 166–168. 1920.—In calculating the damage to stands or to individual trees resulting from their premature exploitation, some foresters use the formula $x = R\,\frac{1.op^m - 1}{1.op^n - 1}$, others the formula $x = \frac{R}{1.op^{n-m}}$. The second formula always gives a larger result, since, as is demonstrated mathematically, it includes not only the future value of the tree or stand but also the expense of management. The first formula is generally to be preferred, both because it confines itself simply to determining the future value of the prematurely exploited stand or tree without attempting to determine what will succeed it, and because it is doubtful whether there really is any expense of management in the case of one or a few isolated trees.—*S. T. Dana.*

1037. Lorenzen, Poul. **100-Aarig Adelgran paa Bornholm. [100-year noble fir (Abies pectinata) on Bornholm, Denmark.]** Dansk Skovforenings Tidsskr. 5: 92–101. *1 pl.* 1920. —A plantation made one hundred years ago yielded 1010 cubic meters of wood per hectare; the average diameter was 37 cm., the average height 32 meters and the total basal area 59.8 square meters.—*J. A. Larsen.*

1038. Mackay, H. **Forestry in Victoria.** Australian Forest. Jour. 3: 116–119. 1920.— The first installment of a serial article, briefly discussing past and present forest resources of Victoria and their economic significance.—*C. F. Korstian.*

1039. Mattirolo, Oreste. **Considerazioni sulla convenienza dell'impiego del legno in specie nella costruzione dei "lungheroni d'ala" degli aeroplani. [Use of wood in aeroplane-wing frames.]** Atti R. Accad. Lincei, Rend. (Cl. Fis. Mat. e Nat.) 28¹: 249–253. 1919.—Observations made on wooden parts of broken aeroplanes indicate that weakness was due to irregular growth of the tree not made evident by the tests in use. Ash wood (*Fraxinus excelsior* Linn.) adjacent to breaks was easily separable into hard granules, these granules being apparently made up of elements characteristic of spring growth. The conclusion is reached that some material of more uniform texture than wood must be found for this use.—*F. M. Blodgett.*

1040. Metcalf, Woodbridge. **A precocious youngster.** Amer. Forestry 26: 15. *1 fig.* 1920.—See Bot. Absts. 5, Entry 1899.

1041. Perdrizet, A. **Taillis et futaie.** [Coppice and high forest.] Rev. Eaux et Forêts 58: 2–4. 1920.—The rotation of all coppice stands owned by the state should be lengthened, or else they should be converted into high forest as rapidly as possible, in order to produce a larger proportion of sawtimber. This will involve a certain loss in revenue, which can be minimized, however, if the state will do its own logging.—*S. T. Dana.*

1042. Ross, C. R. **Annual report of the Forest Department for the year ending 31st March, 1919, including report on railway sleeper plantations for the same period.** *34 p.* Forest Dept. Union of South Africa, 1919.—This is the usual administrative report for the period. The extension and constitution of state forests, management of state forests, financial results, timber imports and exports and general administration are discussed. The protection of forests is given considerable attention especially with respect to insects, fungous diseases, animals and climatic causes. Silviculture is treated rather extensively under the heads of Natural reproduction, Artificial reproduction, Drift sands operation, Cultural operations, Sylvicultural notes and Trial of new species. Detailed information is given on the railway-sleeper plantations.—*C. F. Korstian.*

1043. Schlich, Sir Wm. **The Bagley Wood sample plots.** Quart. Jour. Forest. 13: 266–268. 1919.—Ten experimental plots of important economic forest trees now 10 to 12 years of age, in Bagley Wood (Oxford, England), afford a rather interesting comparison of height and volume growth. The trees and their total average height growth were: Douglas fir (Pacific Coast form), 32 feet; western hemlock, 23 feet; western red cedar, 23 feet; Sitka spruce, 26 feet; Japanese larch, 22 feet; Tyrolese larch, 26 feet; Corsican pine, 21 feet; white pine, 19 feet; Douglas fir (Colorado form), 16 feet; and Norway spruce, 15 feet. The trees were all spaced 4×4 feet with the exception of Corsican pine, which was spaced 3×3 feet. The annual volume production varies from 306 to 85 cubic feet and follows closely the height growth, with the exception of Corsican and white pines. The annual volume increment of Corsican pine is out of proportion to its height growth because of its close spacing, and white pine has developed an exceptionally large diameter considering its comparatively moderate height growth. —*C. R. Tillotson.*

1044. Stoate, P. N. **The eucalypts in relation to soil fertility.** Australian Forest. Jour. 3: 112–113. 1920.—A reply to a paper by Owen Jones (Bot. Absts.), controverting Jones' proposals. [See also Bot. Absts. 6, Entry 1032.]—*C. F. Korstian.*

1045. Vestergaard, N. **Adelgran i Jäderborg Dyrehave.** [Noble fir (Abres pectinata?) in Jäderborg game reserve, Denmark.] Dansk Skovforenings Tidsskr. 5: 81–86. *4 pl.* 1920. —The last trees from three groups of plantations set out in 1765 have been cut. The largest tree measured 1.27 meters in diameter, at breast height, 40.7 m. in height and contained 21.4 cubic meters of wood.—*J. A. Larsen.*

1046. Weis, Fr. **Om Gödkning i Skoven.** [Fertilization of forest soils.] Dansk Skovforenings Tidsskr. 5: 102–131. 1920.—A discussion of the needs, means, methods and advantages of fertilizing forest soils for greater production of material.—*J. A. Larsen.*

1047. Wild. **Das übliche Sprichwort "der erste Wald taugt nichts" trifft nicht immerzu.** [The proverb "the first forest is good for nothing" not always true.] Forstwiss. Centralbl. 41: 440. 1919.—Actual yield of 80-year-old stand of spruce, which originated from broadcasting seed on an old field (Germany), was 973.75 cu. m. per hectare, or a mean annual growth of 12.17 cu. m. per annum. Average middle diameter was 27 cm., average length of stem 26 m.—*W. N. Sparhawk.*

1048. Wilson, E. H. **The romance of our trees. VII. The beeches.** Garden Mag. 31: 115–119. *4 fig.* 1920.—See Bot. Absts. 6, Entry 1471.

GENETICS

George H. Shull, *Editor*
James P. Kelly, *Assistant Editor*

1049. Allendorf and Ehrenberg. **Die Aufgaben des Sonderausschusses für Zuckerrübenbau.** [**Special problems of sugar-beet breeding.**] Mitteil. Deutsch. Landw. Ges. **1919**: 531–534. 1919.—Breeders are urged to produce a higher-yielding beet without raising salt-content or lowering sugar-content; or with only a small lowering of the latter. Effects of closest inbreeding should be tested out. For distilleries a beet high in salt and protein might be bred. [From anonymous review in Zeitschr. Pflanzenzücht. **7**: 112. Dec., 1919.]—*J. P. Kelly.*

1050. Anonymous. **Polnische Getreide- und Kartoffelzuchtgesellschaft.** [**Polish grain and potato breeders association.**] Zeitschr. Pflanzenzücht. **6**: 116–117. June, 1918.

1051. Anonymous. [German rev. of: Correns, C. **Ein Fall experimenteller Verschiebung des Geschlechtsverhältnisses.** (A case of experimental shifting of the sex ratio.) Sitzungsbericht. d. k. Preuss. Akad. Wissenschaft. **51**: 658–717. 1917.] Zeitschr. Pflanzenzücht. **6**: 98. June, 1918.

1052. Anonymous. [German rev. of: Havas, G. **Rendellenességek a közönséges kenderen, Cannabis sativa L. var. monophylla.** (**Dwarf hemp plants due to inbreeding.**) Kizérletügyi Közlémények Jahrb. **1916**: 712–717. 1916.] Zeitschr. Pflanzenzücht. **6**: 99. June, 1918.

1053. Anonymous. [German rev. of: Kraus, C. **Untersuchungen über die Vererbungsverhältnisse bei Nachkommenschaften reiner Linien.** (Studies on inheritance ratios in progenies of pure lines.) Fühlings Landw. Zeitg. **66**: 457–487. 1917.] Zeitschr. Pflanzenzücht. **6**: 100. June, 1918.

1054. Anonymous. [German rev. of: Lotsy, J. P. **L'Oenothera de Lamarck (Oenothera Lamarckiana de Vries) considérée comme chimère nucléaire.** (Lamarck's Oenothera (Oenothera Lamarckiana de Vries) considered as a nuclear chimera.) Arch. Néerland. Sci. Ser. **3**: 342–350. 1917. (See Bot. Absts. 2, Entry 439.)] Zeitschr. Pflanzenzücht. **6**: 103. June, 1918.

1055. Anonymous. [German rev. of: Mayer-Gmelin, H. **Mededeelingen omtrent enkele kruisings en veredelingsproefnemingen.** (Reports on several experiments in crossing and selection.) Cultura **30**: 1–19. *4 pl.* 1918. (See Bot. Absts. 4, Entry 675.)] Zeitschr. Pflanzenzücht. **6**: 103–104. June, 1918.

1056. Anonymous. [German rev. of: Terasvuori, K. **Über Finnland feldmässigen gebaute Erbsenformen. Experimentelle Vererbungsuntersuchungen mit besonderer Berücksichtigung der Anzahl der Samenanlagen und Samen in den Hülsen.** (On forms of peas largely grown in Finland. Genetical studies with special reference to number of ovules and seeds in the pods.) Acta Soc. pro fauna et flora Fennica **40**: 1915.] Zeitschr. Pflanzenzücht. **6**: 105–106. June, 1918.

1057. Anonymous. [German rev. of: Urban, J. **Über die Farbe des Rübenkrautes früh- und spätreifender Rüben.** (On the color of the plant of early and late-ripening beets.) Zeitschr. Zuckerrübenindust. Böhmen **42**: 281–297. 1918.] Zeitschr. Pflanzenzücht. **6**: 107. June, 1918.

1058. Anonymous. [German rev. of: von Ryx, G. **Ein neues Beispiel einer Knospenmutation bei den Kartoffeln.** (A new example of bud mutation in potatoes.) Deutsch. Landwirtsch. Presse **2**: *1 fig.* 1918.] Zeitschr. Pflanzenzücht. **6**: 105. June, 1918.

1059. Anonymous. [German rev. of: Zade, A. **Der Hafer. Eine Monographie auf wissenschaftlicher und praktischer Grundlage.** (Oats. A monograph on scientific and practical principles.) *8vo., 355 p., 32 fig.* Fischer: Jena, 1918. (See Bot. Absts. 2, Entry 467.)] Zeitschr. Pflanzenzücht. 6: 107. June, 1918.

1060. Armbruster, Ludwig. **Messbare phaenotypische und genotypische Instinktveränderungen. Bienen und Wespengehirne, neu verglichen und als Mass benutzt in Fragen der Stammes- und Staatengeschichte sowie Vererbung und Genogenese. Nebst anhang über Nomada.** [Measurable phenotypic and genotypic changes of instinct. Bee and wasp brains compared anew and used as a measure in questions of race and state history, as well as heredity and genogenesis, with an appendix concerning Nomada.] Arch. Bienenkunde 1: 1–40. *5 pl. 8 fig.* 1919.

1061. Bartos, W. **Der Einfluss der Veredlung auf den Wert der Rübe.** [The influence of breeding on the value of the beet.] Zeitschr. Zuckerind. Böhmen 42: 299–302. 1918. [Anonymous German rev. in: Zeitschr. Pflanzenzücht. 6: 98. June, 1918.

1062. Becker, J. **Vererbung gewisser Blütenmerkmale bei Papaver Rhoeas.** [Inheritance of certain floral characters in Papaver Rhoeas.] Zeitschr. Pflanzenzücht. 6: 215–221. *3 fig.* 1918.—Author presents observations on markings at base of petals in case of 40,000 corn poppies. Best developed marking consists of two parts, an inner black fleck usually elongated radially (designated by +s) which is capped toward outside by wide white spot (+w). Petals may occur without markings (−s −w), with black bar only (+s −w), with white spot alone (−s +w), or with both markings (+s +w). Possible combinations total 16 since inner pair of petals may be marked independently of outer petals but only nine of the 16 actually occur, since +s and +w appear in outer petals only when they are also in inner petals. +s and +w may show in inner petals even though lacking in outer. To explain author postulates two inhibiting factors, H_1, acting only on inner petals, and H_1 and H_2 affecting both inner and outer petals; further, that simplex doses of genes for +s and +w dominate H_1 while duplex combinations are supposed to dominate both H_1 and H_2. No experimental data bearing on this hypothesis were obtained. In unfavorable environment all markings are reduced or absent.—*James P. Kelly.*

1063. Benders, A. M. **Het percentage der verwantenhuwelijken.** [The frequency of consanguineous marriages.] Genetica 2: 51–54. Jan., 1920.—Influence of consanguinity of parents upon posterity has always attracted the attention of practical eugenicists, especially in medicine. It is especially desirable to know the true percentage of consanguineous marriages among man. Author has made statistical studies; he classifies the patients of some Dutch institutions of neuropathics according to their religions, into three groups: Protestants, Catholics and Jews. He found among Protestants the percentage of 2.2, Catholics 1.1, Dutch-Jews 8.5 and Portuguese-Jews 25.4, this last number being, because of the small total number, not wholly exact. In the total of inhabitants (30 Protestants : 20 Catholics : 1 Jew) the percentage of consanguineous marriages in Holland may be stated to be 1.9; probably this number may be somewhat too high for two reasons: (1) Out of the great number of marriages, the consanguinity of which was unknown and therefore the question in the author's blanks unanswered, far the greater part will be nonconsanguineous, and (2) Between consanguinity of parents and nervous-diseased posterity there may perhaps be some relation, so that the consanguinity in this material is found in more cases, than between parents of same posterities.—*M. J. Sirks.*

1064. Blaringhem, L. **Couleur et sexe des fleurs.** [Color and sex of flowers.] Compt. Rend. Soc. Biol. 83: 892–893. June, 1920.

1065. Bolk, L. **Hersenen en Cultuur.** [Brains and culture.] *63 p., 1 fig.* Scheltema en Holkema's Boekhandel: Amsterdam, 1918.—Various examples are discussed by the writer, that characteristics of human embryos and those of the chimpanzee are similar, while in later

development the chimpanzee changes and gets other appearance, man being more conservative and fixing the embryonal qualities. From these facts the following conclusion is drawn: "that the causes of the loss of hairy skin in man, except on the skull, are already at work in the embryonal development of the Primates. Thus it can not be caused by external influences, nor by causes appearing for the first time at the moment of origin of man. Then it must be an internal factor for development at work already in principle in the Primates and reaching in man its maximum of force." This internal factor is cause of man's conservatism,and this fact is a determined variation. From this, the writer gives as a most far-reaching consequence the opinion, that the series of animals was fated to take its origin and its development as it has been taken; there was determined already in the first living organism the future of man-building.—*M. J. Sirks.*

1066. Breitenbecher, J. K. **The relation of water to the behavior of the potato beetle in a desert.** Carnegie Inst. Washington Publ. **263**: 341–384. *5 fig.* 1918.—Egg-production is favored by high humidity. Beetles die if buried while activities are normal, but hibernate successfully if first somewhat desiccated. Hibernation may be induced by desiccation, except at low temperatures. Duration of hibernation depends on humidity and temperature, emergence from hibernation requiring moisture and warmth.—*A. Franklin Shull.*

1067. Cardot, Henry, and Richet, Charles. **Hérédité, accountumance et variabilité dans la fermentation lactique. [Heredity, adaptation and variations in lactic fermentation.]** Ann. Inst. Pasteur **33**: 575. Sept., 1919.

1068. Cauli-rabi. **A Brassica cross.** Gard. Chron. **67**: 8. Jan. 3, 1920.—One seed was presumed to result from a cross between an Autumn Giant cauliflower and a kohlrabi. The plant from this seed had a large swollen stem like the kohlrabi. The seeds of this plant, apparently from open pollination, produced plants having swollen stems of different shapes, but similarly shaped leaves.—*John Belling.*

1069. C[oulter], J. M. **Sex intergrades.** [Rev. of: Yampolsky, Cecil. **The occurrence and inheritance of sex intergradation in plants.** Amer. Jour. Bot. **7**: 21–38. Jan., 1920. (See Bot. Absts. **5**, Entry 502.)] Bot. Gaz. **70**: 88. July, 1920.

1070. Dalcq, Albert. **Note sur la spermatogénèse de l'orvet. Aspect nucléaires de la lignée typique (existence d'un héterochromosome). [Note on the spermatogenesis of the orvet (Anguis). Nuclear aspects of the typical line (existence of a heterochromosome.]** Compt. Rend. Soc. Biol. **83**: 995–997. 1920.

1071. Dammerman, K. W. **On hybrids of Batocera albofasciata and gigas.** Tijdschr. voor entomologie **62**: 157–160. *2 pl.* 1919.—Some deviating forms of *Batocera*, partly caught in the field, partly reared on Ficus-wood, and supposed to be hybrids between *Batocera gigas* Drap. and *B. albofasciata* Degeer, led author to undertake experiments of cross-breeding between these two species. Small individuals of *B. gigas* were selected for these experiments, in order to prevent the difference in size from being a hindrance to crossing. The crosses were successful; only their number was small, viz., 14 from *albofasciata* male and *gigas* female and 15 from the reciprocal cross. The hybrids differed somewhat, among themselves in regard to color and design; as regards color they were on the whole intermediate, as regards design strongly matrocline. Offspring from these F_1-hybrids could not be obtained; they may be considered as being sterile. However a few descendants could be bred from *gigas* male and a female strongly resembling *gigas*, but with two white spots on the elytra, the parents of which however were not known. Of these five hybrids thus obtained, 3 were unspotted, while two of them showed a third spot beside the two maternal spots.—*M. J. Sirks.*

1072. De Wilde, P. A. **Verwantschap en erfelijkheid bij doofstomheid en retinitis pigmentosa. [Relationship and heredity in deaf-and-dumbness and retinitis pigmentosa.]** Diss. Amsterdam. *91 p.* 1919.—From an extensive investigation of the occurrence of deaf-mute-

ness and of retinitis pigmentosa in Holland the following conclusions have been drawn by the writer: A. Marriages of relatives gave three times as many cases of deafmuteness as marriages between non-relatives, if the number of marriages between relatives is taken as being 2 per cent of the total number of marriages; (B) If childless marriages are eliminated, deafmuteness occurs among Protestants in 13.6 per cent, when both parents are deaf-and-dumb; in 16.3 per cent when one of the parents is deaf-mute. For the Jews these numbers are 42.8 per cent and 33.3 per cent; for the Catholics in both cases 0 per cent: C. Deaf-muteness is found among Jews in 5.5 times as many cases as within the Christian inhabitants; D. The number of childless marriages is greater when both parents are deaf-mute and the number of children fewer in marriages between two deaf-mutes, than in marriages between deaf-mute and normal. True congenital deaf-mutes seem to be most frequent among the Jews.—For retinitis pigmentosa the writer gives these conclusions: A. The male sex is more susceptible than the female (relation 3:2), a fact already found by Nettleship; B. Out of the marriages of retinitis-pigmentosa patients 14 per cent are childless; C. The abnormality is most found among the Jews (6 times as many as might be expected), least among Catholics; D. Of all patients 22 per cent are born from consanguineous marriages (also found by Leber and Nettleship); E. Direct heredity could be confirmed in 25 per cent of the observed cases; F. Out of 167 patients of retinitis pigmentosa, 14 were also deaf-mutes; of these 14, 6 were born from consanguineous matings; G. Retinitis and deafness combined were found in 24 cases, of which 7 descended from consanguineous parents; retinitis with deafness as family-character was observed in 6 cases.—*M. J. Sirks.*

1073. Dickel, F. **Die geschlechtsbildungsweise bei der Honigbiene wie deren grundsätzliche Bedeutung für die Geschlechtsbildungs frage überhaupt. [The manner of sex determination in the honey bee and its fundamental significance for the problem of sex determination in general.]** Zeitschr. Wiss. Insektenbiol. 13: 33. 19—.

1074. Doyer, J. J. Th. **Proeve van een onderzoek omtrent het familiair en hereditair voorkomen van tuberculose volgens de wetenschappelijk-genealogische methode. [Preliminary researches on the familial and hereditary occurrence of tuberculosis.]** Diss. *214 p., 7 genealogical trees, and 258 quarter tables.* J. B. Wolters: Groningen, 1920.—Author's medical practice has supplied to him a very extensive material for obtaining deeper insight in the relations of hereditary dispositions and tuberculosis. The author's studies are not yet decisive as to the question, whether differences in disposition may be inherited, but his provisional results show unmistakingly a certain individual disposition for tuberculosis, that may go farther by inheritance in succeeding generations. Seven genealogical trees and 256 quarter-tables contain a rich material for his provisional hypothesis.—*M. J. Sirks.*

1075. Elderton, Ethel M. **Life-history albums.** Biometrika 12: 373–374. Nov., 1919.

1076. Frets, G. P. **De polymerietheorie getoetst aan de erfelijkheid van den hoofdvorm. [The theory of polymeric factors, tested by heredity of head-form in man.]** Genetica 2: 115–136. Mar., 1920.—The results obtained by the writer in measuring a great number of lengths and breadths of human skulls, may be explained by accepting, according to the polymery-hypothesis of Nilsson-Ehle, a number (at most 13) of like factors, working in the same direction. These heritable factors may be identical. The important fact, that the amplitude of variability, shown by skull-measures of children, moves with the skull-measures of the parents, is in perfect harmony with the polymery-hypothesis, the experiments of Nilsson-Ehle giving a solid, though still narrow, basis for this hypothesis. Another explanation could be derived from the hypothesis of selection, as in its new form defended by Castle. In author's opinion however, the polymery-hypothesis has a greater degree of probability.—*M. J. Sirks.*

1077. Frets, G. P. **Over de erfelijkheid van den hoofdvorm. [Heredity of head-form in man.]** Handelingen Nederl. Natuur- en Geneeskundig Congres (1919) 17: 350–359. 1920.—Brachycephalic as also dolichocephalic form of head are hereditary characters. Among brachycephalics must be noted two classes, macrobrachycephalics and microbrachycephalics.

Macrobrachycephalic form is dominant, dolichocephalic the recessive; dolichocephalic however is dominant, while microbrachycephalic would be recessive. Perhaps this dominance is correlated with sex; dolichocephalic form may be dominant in men, brachycephalic in women. Besides this sons seem to have a tendency to exhibit the headform of their fathers, daughters those of their mothers.—*M. J. Sirks.*

1078. Fruwirth, C. **Die gegenwärtige Organisation der Pflanzenzüchtung in Deutschland und in Österreich-Ungarn. [The present organization of plant breeding in Germany and Austria-Hungary.]** Nachr. Deutsch. Landw. Ges. Österr 1919: 35–39. 1919.—After discussing actual conditions author presents view that creation of original stock of seed, following breeding, ought not to be work of small farms nor of associations of such. Advantages of author's methods are pointed out. [From anonymous review in Zeitschr. Pflanzenzücht. 7: 118. Dec., 1919.]—*J. P. Kelly.*

1079. Fruwirth, C. **Allgemeine Züchtungslehre der landwirtschaftlichen Kulturpflanzen. (Handbuch der landwirtschaftlichen Pflanzenzüchtung Bd. I. Fünfte gänzlich neubearbeitete Auflage. [General genetics of agricultural plants. (Handbook of agricultural plant-breeding. Vol. I.) 5th ed., entirely revised.]** *8vo, xviii + 442 p., 8 pl., 89 fig.* Paul Parey: Berlin, 1920.

1080. Fruwirth, C. **Handbuch der landwirtschaftlichen Pflanzenzüchtung. II. Die Züchtung von Mais, Futterrüben und anderen Rüben, Oelpflanzen und Gräsern. [Handbook of agricultural plant-breeding. II. The breeding of maize, fodder beets and other roots, oil plants and grasses.]** *3rd. ed., 262 p., 50 fig.* Paul Parey: Berlin, 1918.—In third edition, larger than second by 60 pages, the sections on fodder beet, maize and other grasses especially have been rewritten to take account of recent work. Thorough handling of literature is emphasized. [From author's statement in Zeitschr. Pflanzenzücht. 7: 144–145. Dec., 1919.] —*J. P. Kelly.*

1081. Fruwirth, C., Th. Roemer, E. von Tschermak. **Handbuch der landwirtschaftlichen Pflanzenzüchtung. 4. Die Züchtung der vier Hauptgetreidearten und der Zuckerrübe. [Handbook of agricultural plant breeding. Vol. 4. Breeding of the four chief cereals and the sugar beet.]** *3rd ed., 8vo, xv + 504 p., 42 fig.* Paul Parey: Berlin, 1918.—Most parts of this new edition of volume 4 are remodelled, especially the hybridization sections, made necessary by the large amount of research of recent years. Recasting of one part has been due also to there being a new co-author, Roemer, who has written section on beets. Enlargement of present volume is kept within 40 pages by limiting general discussion and making reference to earlier edition for certain less frequently used portions. [From anonymous statement in Zeitschr. Pflanzenzücht. 7: 145. Dec., 1919.]—*J. P. Kelly.*

1082. Gassner, S. **Beiträge zur physiologischen Characteristik sommer- und winteranueller Gewächse, inbesondere der Getreidepflanzen. [Contributions on the physiological characteristics of summer and winter annuals with special reference to the cereals.]** Zeitschr. Bot. 10: 417–480. *7 fig., 2 pl.* 1918.—Author recalls his earlier experiments showing that with obligate winter-annual cereals shooting-up in spring requires a cold period during or subsequent to germination. In present paper he presents further experimental details. With Petkus summer-rye there was no after-influence of various temperatures during germination. Petkus winter-rye, bred from same original population as Petkus summer-rye, showed marked effects of temperature. The cold requirements of Svalöf Extra Squarehead were as great as in Petkus winter-rye but were less pronounced for Friedrichswerther winter-rye. Cold requirements of other varieties are also given. As distinguishing winter and summer cereals author emphasizes cold requirements of former and sensitivity to frost of latter and not relative length of life of the two kinds. These characteristics should be kept in mind in genetical work on summer and winter cereals. The need for low temperature and resistance to frost are positively correlated. [From anonymous review in Zeitschr. Pflanzenzücht. 7: 118–120. Dec. 1919.]—*J. P. Kelly.*

1083. G[atenby], J. B. [Rev. of: Bower, F. O., J. G. Kerr, and W. E. Agar. **Lectures on sex and heredity delivered in Glasgow, 1917–18.** *16mo, vi + 119 p., 49 fig.* Macmillan Co.: London, 1919.] Science Progress **15**: 152–153. July, 1920.

1084. Gates, R. Ruggles. **Heredity and eugenics.** Eugenics Rev. **11**: 193–201. **12**: 1–13. 1920.

1085. Grier, N. M. **Variation and distribution of leaves in Sassafras.** Biometrika **12**: 372–373. Nov., 1919.

1086. Grosser, Otto. **Die Lehre vom spezifischen Eiweiss und die Morphologie, mit besonderer Anwendung auf Vererbungsfragen und den Bau der Plazenta. [The doctrine of specific proteins and morphology with special application to questions of heredity and the structure of the placenta.]** Anat. Anzeiger **53**: 49–57. 1920.

1087. Hagedoorn-La Brand, A. C., and A. L. Hagedoorn. **Inherited predisposition for a bacterial disease.** Amer. Nat. **54**: 368–375. July–August, 1920.—Review of evidence for inherited predisposition to disease. Experimental:—very minute mice related to the Japanese Waltzing type obtained from Japan and China crosses with albinos. F_1 and F_2 hybrids were obtained, also backcross $F_1 \times$ Japanese. Epidemic of staphylococcus occurred in mousery. Disease took rapid course and no spontaneous recovery was recorded. Proportion of mortality in various generations at weighings of January 4 and February 14 was calculated. All Japanese mice died. F_2, 31 litters gave total of 125 on January 4, 91 on February 14. No albinos of same age died among "very considerable number." No F_1 mice died among 14 observed. On a 3:1 basis F_2 expected 93.75:31.25, observed 91:34. Back-cross litters (14), expected 1:1 ratio, observed 25:32. Excess of deaths over those expected is considered as representing those due to all other causes. No experimental inoculation was attempted.—*C. C. Little.*

1088. Hansen, W. **Die sinnbildliche bewertung der Parzellen- und Zuchtpflanzen. [The valuation of plots and breeding plants by inspection.]** Illustr. Landw. Zeitg. **1918**: 42. 1918. [Anonymous German rev. in: Zeitschr. Pflanzenzücht. **6**: 99. June, 1918.]

1089. Harder, R. [German rev. of: Küster, Ernst. **Über weissrandige Blätter und andere Formen der Buntblättrigkeit. (On white-margined leaves and other forms of variegation.)** Biol. Zentralbl. **39**: 212–251. *27 fig.* May, 1919. (See Bot. Absts. 4, Entry 644.)] Zeitschr. Bot. **12**: 267–268. 1920.

1090. Harvey, Ethel Browne. **A review of the chromosome numbers in the Metazoa. II.** Jour. Morph. **34**: 1–67. June 20, 1920.—This contribution, supplementing the author's previous work (Jour. Morphol., v. 28, Dec. 1916), completes list of chromosome numbers for the metazoa. Tabulation includes complete bibliography. Short historical and critical account is given and also a review of the occurrence of heterochromosomes. Conclusions are: (1) the chromosome number for each species is constant with a few exceptions; (2) there is a definite number of chromosomes characteristic of a related group of animals (the type number); (3) changes of number in related forms have resulted from the splitting or fusion of chromosomes.—*Bertram G. Smith.*

1091. Houwink, R. Hzn. **Erfelijkheid. Populaire beschouwingen omtrent het tegenwoordige standpunt der erfelijkheid, verzameld uit theorie en practijk. [Heredity. Popular presentation of the present status of heredity compiled from theory and practice.]** *62 p., 5 pl.* Stoomdrukkerij Floralia: Assen, 1919.—Brief popular treatise by a well-known expert in poultry-breeding. It contains the most important principles of heredity and propagation and their relations to poultry-breeding. The booklet is intended for the common breeder; without being too learned, the difficult subject is treated in easily comprehensible way.—*M. J. Sirks.*

1092. Kooiman, H. N. **Eenige opmerkingen naar aanleiding van Lotsy's artikel "De Oenotheren als kernchimaeren."** [Some remarks on Lotsy's paper "The Oenotheras as nuclear chimeras."] Genetica 2: 235–243. May, 1920.—Some theoretical remarks upon Lotsy's paper. With Lotsy, author is of opinion, that distribution of chromosomes according to the laws of chance gives a good explanation for simple Mendelism; but he does not accept the identification of factors, working in the same direction, as founded upon the same causes. He does not accept Lotsy's disavowal of the existence of genes, nor his hypothesis of chromosome-linkage. The *Drosophila* researches are not in accordance with this hypothesis; so for *Oenothera* it cannot be admitted without very strong arguments. For that reason the writer supposes that the most important characters of the *Oenotheras* are bound to genes, that are localized in the same chromosome. A strong linkage between these genes would then probably be responsible for the hereditary behavior of the *Oenotheras* according to Renner's researches. —*M. J. Sirks.*

1093. Kooiman, H. N. **Overzicht over enkele Oenothera-problemen.** [Review of a few Oenothera-problems.] Genetica 1: 134–148. Mar., 1919.—Critical summary of the most important Oenothera-papers of later years and of the problems they treat.—*M. J. Sirks.*

1094. Kroon, H. M. **De overerving der kleuren bij onze huisdieren, in het bijzonder by het paard.** [Heredity of coat-color in domesticated animals, especially in the horse.] Tijdschr. voor diergeneeskunde 47: 83–95. 1920.—See next following Entry, 1095.

1095. Kroon, H. M. **Nog eens. De overerving der kleuren bij onze huisdieren, in het bijzonder bij het paard.** [Color inheritance in domestic animals, especially the horse. (2).] Tijdschr. voor diergeneeskunde. 47: 312–314. 1920.—Following abstract represents next preceding entry (1094) as well as present one. First paper is a summary of the work done by previous authors, Harper, Robertson, Wilson, Sturtevant, Anderson, Wentworth, Walther, Stroever, Reimers for detecting the various inheritable factors for coat-color in horses. Author makes use of the nomenclature of Wentworth: *C*, chestnut, *H*, black, *B*, brown, *G*, gray, *D*, dappling, *R*, roan, *P*, piebald, *I*, diluting factor, *S*, star, and *M*, mane; he indicates the genotype combinations, corresponding with the various colors.—In the second paper a special case, mentioned by one of his correspondents is treated along lines indicated in the first article. A mare, White Mouse, gave by a dark chestnut stallion, The Rush, a white-born foal (White-born is the extreme form of piebald); thus $CCPP + CCpp = CCPp$.) A second time White Mouse was served by William IV, brown, and gave a piebald foal ($CCPP + CCHHBB = CCHhBbPp$); for the third time a foal was bred from White Mouse by Le Cid, a common gray (not white-born), the foal was at birth piebald, but became in the same summer wholly gray ($CCPP + CCHHBBGG = CCHhBbGgPp$) and a fourth foal was born from White Mouse by Cher Amour, a French chestnut ($CCPP + ccpp = CcPp$, a white-born foal). The mare White Mouse seemed therefore to be homozygous for the piebald factor *P*.—With our knowledge of the various color factors in horses such seemingly difficult cases may find a happy solution.—*M. J. Sirks.*

1096. Kuiper, K., Jr. **Onderzoekingen over kleur en teekening bij runderen. Naar experimenten van R. Houwink Hzn.** [Researches on color and markings in cattle. Based on experiments by R. Houwink Hzn.] Genetica 2: 137–161. Mar., 1920.—Author tries to show how the characteristic markings of the Dutch belted cattle are inherited in breeding within the race and in crossings with the Dutch spotted cattle. Mating two animals of Dutch belted, or an individual of Dutch belted with spotted, may give self-colored calves. A Dutch belted bull gave with 55 Dutch spotted cows 27 Dutch belted, 24 self-black, and 4 spotted calves. For explanation of this result the writer accepts two pairs of allelomorphic factors: *Ll* for belted markings, epistatic to *Ee* self-colored, and a repulsion between *L* and *E* in the reduplication-series 1:7:7:1. Accepting these conditions, the observed facts are explained easily. The writer supposes Dutch belted cattle are in most cases diheterozygous, or *LlEe*. The individuals with faulty markings, appearing in great number in crossings with spotted cattle,

are then *L Lee* or *Llee*. Strong correlation exists between white feet and too large belting.—*M. J. Sirks.*

1097. Larger, R. **Théorie de la contre-évolution, ou dégénérescence par l'hérédité. [Theory of retrogressive evolution, or degeneration by heredity.]** *xiv + 405 p., 21 fig.* Félix Alcan: Paris, 1919.

1098. Lawritson, M. N., J. W. Hendrickson, and W. B. Nevens. **Pure-bred sires effect herd improvement.** Nebraska Sta. Circ. 8: 3–15. *7 fig.* 1919.—Semi-popular paper giving records of the daughters of three bulls, one Jersey and two Holstein-Friesian. The daughters' average milk and butter fat yield was increased over that of their dams by the use of these bulls. The conclusion is drawn that even the small breeder can afford to purchase a pure-bred bull as the increased worth of his sons and daughters will more than compensate for the extra first cost.—*John W. Gowen.*

1099. Lehmann, Ernst. **Bemerkungen zu dem Aufsatze von O. Renner: Mendel'sche Spaltung und chemisches Gleichgewicht. [Comments on the article of O. Renner: Mendelian splitting and chemical equilibrium.]** Biol. Zentralbl. 40: 277–286. June, 1920.

1100. Lienhart. **De la possibilité pour les éleveurs d'obtenir a volonté des males ou des femelles dans les races gallines. [On the possibility for the raiser of poultry to secure males or females at will in the Gallinaceae.]** Compt. Rend. Acad. Sci. Paris 169: 102–104. 1919. —The possibility rests, as the author states, upon the recognition of sex within the egg, before incubation commences. The experimental evidence is small in amount, consisting of two sets of 60 eggs each, each set being the 60 largest of several hundred. In the most favorable experiment 77 males out of 100 were obtained. The author believes that the large eggs give rise to males and the small ones to females. Further experiments are proposed.—*H. D. Goodale.*

1101. Loewenthal, Waldemar. **Ein veränderlicher, Milchzuckerspaltender Paratyphusbazillus. [A mutable paratyphoid bacillus fermenting lactose.]** Centralbl. Bakteriol. 83: 227–321. 1919.

1102. Lotsy, J. P. **Cucurbita-strijdvragen. De soort-quaestie; Het gedrag na kruising; Parthenogenese? I. Historisch overzicht. II. Eigen onderzoekingen. [Cucurbita-problems. The species-question. Results of crossing. Parthenogenesis? I. Historical review. II. New researches.]** Genetica I: 496–531. Nov., 1919. Ibid. 2: 1–21. *9 fig., 1 triple col. pl.* Jan., 1920.—The first part of this paper contains a historical summary of the facts thus far known about species-questions, hybridization and parthenogenesis in *Cucurbita*. It seems to be impossible to obtain hybrids among the Linnean species distinguished by Naudin: *C. maxima, C. pepo, C. moschata* and *C. melanosperma*, but it is easy to make hybrids between the different varieties within these species, at least within *C. maxima* and *C. pepo*. Previous researches had also indicated the existence of an important segregation in the F_2-generations of these hybrids. The process of parthenogenesis occurring among *Cucurbita* species according to the Hagedoorns is unproven and very doubtful.—The second part, containing an account of author's own researches, is summarized by the writer in the following sentences: Several, often very different, constant forms ("Jordanons") could be distinguished within the "Linneon" *Cucurbita maxima* as well as within the Linneon *C. pepo* in the sense of Naudin. Jordanons belonging to the same Linneon, cross easily and give fertile segregating hybrids. As yet, crosses between Jordanons belonging to different Linneons have had no result in the author's experiments. Considering the very large number of unsuccessful efforts it seems pretty safe to say that neither *C. pepo* nor *C. maxima* can be crossed with *C. melanosperma*, an equally strong opinion can not be given as to the possibility of crosses between *C. pepo* and *C. maxima;* those tried were unsuccessful, but the number of efforts was much less than in the case of crossings between *C. pepo* or *C. maxima* with *C. melanosperma*. Crosses between *C. pepo* and *C. aurantiaca* Willd. are as fertile and segregate as fully as those between

Jordanons belonging to the same Linneon, it should however be remembered that Naudin considers *C. aurantiaca* as a mere—though very definite—variety of *C. pepo*. Reciprocal crosses between *C. pepo* and *C. aurantiaca* show certain differences in the length and size of the fruits, these being in both cases matroclinous. Absolute certainty that these differences are not due to heterozygosis of the forms crosssd was not obtainable, but this is, in view of the matroclinous inheritance in both reciprocal crosses, highly improbable. None of the forms of *Cucurbita*, cultivated by the author, was able to form seeds without having been fertilized. Neither apogamy, nor parthenogenesis has been met with. The cases of parthenogenesis in *Cucurbita* described by the Hagedoorns are most probably cases of fertilization by insects, due to insufficient isolation. Some of the forms investigated are parthenocarpous, i.e., they can form fruits without having been fertilized, but such fruits never contain any seeds with embryos.—*M. J. Sirks.*

1103. Lotsy, J. P. **De Oenotheren als kernchimeren.** [**The Oenotheras as nuclear chimeras.**] Genetica 1: 7–69. 113–129. 1919.—In the author's opinion the researches of Renner as well as his own experiments have shown the extraordinary nature of *Oenothera Lamarckiana*; it is a nuclear chimera, resulting from two great factor complexes, localized in the chromosomes. These complexes, out of which the nuclear chimera is constructed, may be wholly independent of each other without exchange of chromosomes or of qualities and without dragging away of chromosomes; in that case no "mutants," properly "segregonts," appear. If a chromosome from one of the complexes is dragged out into the other, then new forms with varying numbers of chromosomes come into existence. Exchange of chromosomes or of qualities give segregonts with the same chromosome number as the original form. The percentage of appearance of these segregonts depends upon the more or less easy exchange of chromosomes or of qualities; a very easy exchange gives high numbers of segregonts or quantitative "mass-mutations." In *Oenothera* no species nor hybrids exist, only nuclear chimeras, and the different exchanges between the constituent chromosome-complexes give origin to the "mutant" forms. The fact of crossing-over, resulting in dragging away a part of a chromosome by another, causes also the possibility of crossing-over in homozygotes or in pure lines. These "mutants" in pure lines result from intranuclear chromosome-changes, not from newly-formed genes.—The various consequences of this opinion with respect to general problems, as the nature of genes, mutability, and the theory of Morgan, are discussed in detail, but are of course of a somewhat hypothetical character.—*M. J. Sirks.*

1104. Lotsy, J. P. **Een opwekking om voort te gaan met het kruisen van individuen tot verschillende linneonten van het geslacht Verbascum behoorend.** [**Encouragement to proceed with crossings of individuals belonging to different Linneons of the genus Verbascum.**] Genetica 2: 22–26. Jan., 1920.—The failure of many experiments in growing posterity of *Verbascum*-hybrids has given us a strong impression of the absolute infertility of these hybrids. Exceptions however were already found by Darwin (Jour. Linn. Soc. 10) and by Mendel (fide Correns Abh. Sächs. Gesellsch. Wiss. 1905) and indicate the possibility of obtaining fertile hybrids within this genus; this induces the author to stimulate other geneticists to renew these experiments.—*M. J. Sirks.*

1105. Lotsy, J. P. **Heribert-Nilsson's onderzoekingen over soortsvorming b¨ Salix met opmerkingen mijnerz¨ds omtrent de daarin en in publicaties van anderen uitgeoefende kritiek aan mijn soorts-definitie.** [**Heribert-Nilsson's researches about species-formation in Salix with my remarks upon his and other writers' critique of my definition of species.**] Genetica 2: 162–168. Mar., 1920.—The ninth chapter of Heribert-Nilsson's paper about his *Salix*-hybrids (Lunds Univ. Aarsskr. XIV. 28. 1918) is, in the opinion of the writer, of enough theoretical importance to give a translation of it in Dutch. This translation is accompanied by a reply of the author to Nilsson's remarks about the nature of "species" as also to those of other writers.—*M. J. Sirks.*

1106. Lotsy, J. P. **Theoretische steun voor de kruisingstheorie.** [**Theoretical arguments for the theory of evolution by means of hybridization.**] Genetica 2: 214–234. May, 1920.—

A defense of author's well-known theory of evolution by means of hybridization against some of the opponents: Dendy, Jeffrey, and an exposition of arguments brought together by other writers (Heribert-Nilsson, Winge, Ernst, Gerould, and others) that support the author's views.—*M. J. Sirks.*

1107. MacBride, E. W. **The method of evolution.** Scientia **14**: 23–33. 1920.

1108. O'D[onoghue], C. H. [Rev. of: Morgan, Thomas Hunt. **The physical basis of heredity.** *14 × 21 cm., 300 p., 117 fig.* J. B. Lippincott Co.: Philadelphia, 1919. (See Bot. Absts. **5**, Entry 422.)] Science Progress **15**: 150–151. July, 1920.

1109. O'D[onoghue], C. H. [Rev. of: East, Edward M., and Donald F. Jones. **Inbreeding and outbreeding.** *14 × 11 cm., 285 p., 46 fig.* J. B. Lippincott: Philadelphia, 1919. (See Bot. Absts. **4**, Entry 571; **5**, Entries 437, 1607, 1695.)] Science Progress **15**: 151–152 July, 1920.

1110. O'D[onoghue], C. H. [Rev. of: Lillie, Frank Rattray. **Problems of fertilization.** *13 × 19 cm., vii + 278 p., 19 fig.* Univ. Chicago Press: Chicago, 1919. (See Bot. Absts. **5**, Entry 410.)] Science Progress **15**: 152. July, 1920.

1111. Pézard, A. Castration alimentaire chez les coqs soumis au régime carné exclusif. [Alimentary castration in cocks subjected to an exclusive meat diet.] Compt. Rend. Acad. Sci. Paris **169**: 1177–1179. 1919.—A discussion of certain experiments of F. Houssay in a paper entitled "Variations expérimentales. Études sur six générations de poules carnivores (Arch. de Zool. exp. et gén., t. 6, 1907, p. 137 à 332." Author concludes that Houssay's observation of atrophied testes and their consequences did not result directly from the flesh diet, but because the birds did not maintain good health.—*H. D. Goodale.*

1112. Renner, O. [German rev. of: Ernst, A. **Bastardierung als Ursache der Apogamie im Pflanzenreich; eine Hypothese zur experimentellen Vererbungs- und Abstammungslehre. (Hybridization as the cause of apogamy in the plant kingdom; an hypothesis for experimental evolution and genetics.)** *8vo, xv + 655 p., 2 pl., 172 fig.* Gustav Fischer: Jena, 1918. (See also Bot. Absts. **3**, Entries 2113, 2151.)] Biol. Zentralbl. **40**: 288. June, 1920.

1113. Richey, H. W. **Factors of fruitfulness.** [Rev. of: Wiggans, C. C. **Some factors favoring or opposing fruitfulness in apples.** Missouri Agric. Exp. Sta. Res. Bull. *32*: 1–60. *6 fig.* 1918. (See Bot. Absts. **5**, Entry 1696.)] Bot. Gaz. **70**: 162–164. Aug., 1920.

1114. Roemer, Th. **Über Lupinenzüchtung.** [On lupine breeding.] Deutsch. Landw. Presse **1919**: 174–175. 1919.—Breeding can secure in lupines a condition of uniform ripening which in these plants is dependent on uniform germination and uniform blooming. In both of these respects individual selection has shown differences. Seed harvest can be increased also by use of best plants revealed by individual selection. Average fruitfulness of pods is hereditary. [From anonymous review in Zeitschr. Pflanzenzücht. **7**: 136. Dec., 1919.]—*J. P. Kelly.*

1115. Roepke, W. **Over selectie van meerderjarige cultuurgewassen in tropisch Nederland.** [On selection of perennial cultivated plants in the Dutch tropics.] Rede Landbouwhoogeschool. *24 p.* H. Veenman: Wageningen, 1920.—As an inaugural address at the Agricultural College of Wageningen the author gives a summarizing report of the work done in the Dutch East Indian colonies in selecting and breeding better races of rubber, tea, coffee, cocoa and quina; he discusses the most important parts of his breeding, and amelioration of the existing material; the vegetative propagation of worthy types on a small scale and on a large scale, hybridization and introduction of new species. Each of these methods has given to the Dutch East Indies valuable types of cultivated plants.—*M. J. Sirks.*

1116. Roffo, A. H. **Sur le rôle du facteur race dans la transmission du cancer chez le rat. Transformation progressive d'une race non réceptive.** [On the rôle of the race factor in the transmission of cancer in the rat. Progressive transformation of a non-receptive race into a receptive one.] Compt. Rend. Soc. Biol. 83: 968–970. 1920.—See Bot. Absts. 6, Entry 1749.

1117. Saint-Hilaire, H. Geoffroy. **L'elevage dans l'Afrique du Nord.** [The breeding industry in North Africa.] *xi + 530 p., 33 pl.* Augustin Challamel: Paris, 1919.

1118. Schade, H. J. M. **Kunnen proefondervindelnke mutaties worden opgewekt bij bacterien?** [Can experimental mutations be obtained in bacteria?] Nederlandsch. Tijdschr. voor Geneeskunde 63: 811–814. 1919.—The researches of Seiffert (Deutsche medizinische Wochenschrift 1911. no. 23) and of Richet and Cardot (C. R. Acad. Sciences, Paris, 31 March, 1919) have been repeated by the author. Their conclusions accepted the possibility of obtaining mutations, by means of bacterial cultures in special media. Author made his cultures, as Seiffert had done, of *B. coli* in agar, to which malachite-green had been added; from the original culture, that could be only grown in agar-nurture with 20 mg. in 10 cc. agar, a strain was cultivated, that was resistant to 666 mg. in the same quantity of agar; after three months this resistance was not diminished. The conclusion of Seiffert and others seemed to be right. That this is not true, however, is shown by the author in a way, different from his previous method. By means of emulsions of his cultures in NaCl-solution, colonies were obtained from very diluted cultures; the strain "adapted" to 666 mg. of malachite per 10 cc. agar grew on each culture as well; this "mutated" strain, after once growing upon pure agar, had lost its adaptation for the greater part; the longer the period of growing upon pure agar, the less the adaptation and the number of resulting colonies. In his first mentioned researches, common cultures did not bring these differences to light because of the immense number of bacteria contained in only one little globule of the culture; after diluting the cultures by means of emulsions, the differences made themselves apparent. Thus the conclusions of Seiffert and of Richet and Cardot are false because of their inexact methods.—*M. J. Sirks.*

1119. Schermers, D. **Erfelijkheid en rasverbetering.** [Heredity and race-improvement.] Schild en Pijl 10: 1–26. 1919.—From the point of view of positive Christianity the writer discusses the consequences, drawn by the modern eugenicists from the facts given by processes of fertilization and of Mendelism. He is extraordinarily skeptical. The great and insuperable difficulties, encountered by the study of heredity in man, especially as related to psychical abnormalities, leads him to deny the practical significance of eugenics; medical examination before marriage can only give good results for alcoholism, syphilis and tuberculosis; in other cases it will be wholly insufficient, while neomalthusianism is fatal. The prospects of a possible improvement of the human race are, owing to the lack of well-established knowledge, unfavorable.—*M. J. Sirks.*

1120. Siegel, W. **Das Recht des Gemüsezüchters.** [The right of the vegetable breeder.] *8vo.* Frick: Wien, 1919.—Author takes up the well-known idea of according to breeders working with cross-pollinated vegetables protection from neighboring cultures of the same species. [From anonymous review in Zeitschr. Pflanzenzücht. 7: 146. Dec., 1919.]—*J. P. Kelly.*

1121. Sirks, M. J. **De analyse van een spontane boonenhybride.** [The analysis of a spontaneous bean hybrid.] Genetica 2: 97–114. Mar., 1920.—Among a number of plants of the dwarf speckled cranberry bean, gathered in 1917, one plant was found whose seeds had not a chamois (yellowish-white) violet-striped seedcoat, but a liver-brown one with blue striping. These seeds had thus been formed on a hybrid plant, resulting from a crossing with an unknown pollen parent, occurring in 1916. By sowing these seeds in 1918, an F_2-generation was obtained and in 1919 an F_3-generation. The analysis of these F_2 and F_3 generations with regard to their seed colors, gave cause to accept seven hereditary factors, present in beans and responsible for these colors. These factors were:—(1) The ground-factor, *P*, responsible for color in general; its presence without others causes the chamois color, its absence gives a white seed-

coat, independent from the other possibly present factors; (2) *G*, factor for yellowish-brown color; chamois is, if *G* is present, changed into yellowish-brown; (3) *L*, factor for liver-brown, by which yellowish-brown is changed into liver-brown, or in homozygotes dark-brown; (4) *V*, factor that changes chamois into violet and yellowish-brown into brown-violet. The factor *L* is epistatic to *V*, the presence of *V* thus being indistinguishable when the formula is *Ll* or *LL*; (5) *Gr*, factor for gray color, changing chamois into gray-chamois, yellowish-brown into gray-yellowbrown and violet into gray-violet. (6) *B*, factor changing violet into blue. This factor covers all other factors and is thus epistatic to them; (8) *S*, striping factor, by which blue, violet and gray in the superficial layers are restricted into stripes. Then one sees a background of chamois, yellowish-brown, liver-brown, gray-violet or bluish-brown. If this background is violet or gray, then *S* exercises also its influence upon it and makes this violet marbled; in consequence these beans show two types of markings, viz., striping and marbling. The other colors are not marbled in the background. This factor *S* may be present in cryptomeric state in the chamois, yellowish-brown and liver-brown colors, but cannot be proven here, because it does not influence these colors.—Probably there are also linkages between some of these factors; perhaps between *P*, *V* and *S* on the one hand and between *G*, *L*, *B* and *S* on the other. This is the more striking because the formulae derived from the splitting-numbers are for the mother-plant, the dwarf speckled cranberry bean, *PPVVSS*, and for the unknown father-plant, that must have had white seedcoats, *ppGGGrGrvvLLBBss*.—*M. J. Sirks.*

1122. Sirks, M. J. **De methodiek der erfelijkheidsleer. [The methodism of genetics.]** Tijdschr. voor diergeneeskunde. 47: 207–217. 1920.—Progress of genetics can only be obtained if a critical examination of the methods in use has preceded the work itself. The critique of the methods in use cannot be sharp enough; in modern times we are no longer contented with the primitive and ancient method of speculation without facts. These facts may be gained by two different ways: direct research of the genetical factors, present in a cell, by cytological studies, and by indirect researches in judging the hereditary factors of an individual by observations or experiments thereupon. This direct method, the cytology, may give us many results, but has thus far not solved the great problem of the localization of heritable factors. In itself cytology is insufficient. Indirect methods of genetics there are four; we may study the chain, that binds the heritable factors in the genotype with the observed characteristics of the individual in its phenotypes in two directions: beginning with the genotype as Schaxel does and studying the development of this genotype into the phenotype by cytomorphological methods or studying by going back from the phenotype-characters and trying to find out the genotypical factors causing them (Phenogenetica Haeckers).—In the second place indirect study of genotype may be drawn along other lines: study of ascendance (Galton) and study of descendance (Mendel). In far the most cases only the last of these methods is sufficient; the methods of Schaxel and of Haecker however may perhaps give us still many results in elucidating the long way between genotypic factors and phenotypic characters.—*M. J. Sirks.*

1123. Sirks, M. J. **Erfelijkheids- en selectieonderzoekingen bij Vicia-soorten. I. De navelkleur van Vicia Faba. [Researches on heredity and selection in species of Vicia. I. Navel color in Vicia Faba.]** Genetica 2: 193–199. 1920.—The navel color in the English bean (*Vicia Faba*) was studied as a heritable character by breeding the posterities of individual plants; partly these plants were isolated, partly they were allowed to flower without isolation. From isolated heterozygous plants splitting offspring in ratio 3:1 were always obtained; black navel color was dominant and white recessive. The heterozygotes could in some cases be distinguished from the homozygotes because of their not black, more gray navel color. Free-flowering plants never gave a more or less exact ratio 3:1; their offspring split in every possible ratio; even in the offspring of white-navel recessives often a great number of black-navel plants could be observed, the results of spontaneous hybridizations.—*M. J. Sirks.*

1124. Sirks, M. J., and J. Bijhouwer. **Onderzoekingen over de eenheid der linneaansche soort Chrysanthemum leucanthemum L. [Investigations on the homogeneity of the**

Linnean species Chrysanthemum leucanthemum L.] Genetica 1: 401–442. Sept., 1919.—Biometric measurements of length and breadth of ray-flowers made very probable, that the Linnean species *Chrysanthemum leucanthemum* L. contains several strains of hereditarily different character, in this sense, that this "species" is a mixture of types, differing in inheritable qualities, and their respective hybrids.—By systematic breeding and counting the ray-flowers of a number of plants grown in families, it could be proven, that this supposition was right and that this Linnean species is far from a unity, but a mixture of types and hybrids. This makes it possible to grow out of this species a number of families, differing in hereditary characters, among others those relating to the number of ray flowers; these families seem to have the Fibonacci-numbers 21 and 34 as modes.—*M. J. Sirks.*

1125. Sirks, M. J. **Die kritische punten van het evolutievraagstuk.** [Critical points of the evolution hypothesis.] Genetica 1: 70–91. Jan., 1919.—The problem of evolution is by most authors taken as a whole; in reality it may be analysed and divided in four great problems, that are more or less favorable to experimental research, the only right way for finding an answer free from speculations. These four critical points out of the mass of problems are: —(1) The origin in nature of new forms, in hereditary factors varying from their parents; experimental research has thus far only shown one cause of this origin: hybridization, that is, fusion of gametes differing in hereditable properties. All other ways of origin of new forms have been thus far unproven.—(2) The existence in nature of groups of individuals, characterized by possessing a great complex of hereditary factors. Answering this problem has been till now unexperimental; mathematical considerations may show the necessity of divergence of a very complicated population into different strains of homozygotic individuals, but also circumstances of life,—isolation, dying out of certain forms and perhaps influence of circumstances on hybrid-splitting—may cause the differentiation of a population into different strains. In this direction a great and extensive field of experimental labor is to be done, before a well-founded answer can be given. (3) The dying out of forms and of groups of forms is more a historical problem; perhaps it will be possible, by means of submission of populations of known genetic constitution to various circumstances of life.—(4) Is there in natural evolution a progression or only a succession? This is a problem of a very subjective character; it is wholly inaccessible for experiments and will remain in the long future a point of philosophical discussion.—*M. J. Sirks.*

1126. Sirks, M. J. **Raszuiverheid en fokzuiverheid.** [Purity of race and purity of breeding.] Genetica 1: 539–552. Nov., 1919.—In genetics every word and every term has gone through its own evolution; this brings in many cases great difficulties for obtaining an exact definition of each of these terms. Every term changes its meaning with the changes of genetics itself; they become more and more sharpened or they must be banished from the geneticists terminology. A discussion of the terms purity of race and purity of breeding is given here by the writer. In pre-Mendelian times identity of portrait (description of figure) could be accepted as indicating purity of race; the Galtonian theory has changed this standard into identity of ancestry, and Mendelian researches have given as definition of purity of race identity of posterity. The exact geneticist would go farther and take as definition the identity of the gametes, formed by an individual as standard for purity of breeding. In practice it is not yet possible to accept this sharpest definition; there are cases, that an individual gives a posterity, seemingly identical, without forming only one sort of gametes. These cases are treated by the writer in detail: the case of the white mice, among others, the case of apogamy in plants without reduction-division and the case of eliminating of the homozygote combinations as in yellow mice and in *Oenothera*-species.—A method of determining the purity of breeding in cases where direct experiments are difficult, is indicated by Schmidt of Copenhagen by his method of diallel (cross-wise) matings.—*M. J. Sirks.*

1127. Sirks, M. J. **Verwantschap als biologisch vraagstuk.** [Relationship as a problem of biology.] Genetica 2: 27–50. Jan., 1920.—The problem of relationship has always taken a central position in genetics; its analyses along the lines of modern genetics is a subject of

great importance. In this paper the writer has indicated the necessity of sharply distinguishing two different views of relationship; relationship in descendance or genealogic relationship and relationship in capacities, gentoypic relationship. These two sorts of relationship may not be confounded in modern literature of genetics as has till now been done by many writers; they are not at all identical; two individuals may in genealogical sense be very nearly related, though their genotypes are highly different; inversely the genotypes of two individuals can be identical, however they don't show any genealogical relationship. In the great lines of phylogeny a narrow tie will perhaps have bound these two relationships, but the presence of the one is not even an indication for the other's appearance.—Now it will be a subject of a great many researches to find good methods for establishing these relationships: the ancient method of portrait-building and comparing is no longer sufficient. Experimental methods only can be accepted. But not all the researches, called experimental, are really experimental. Really experimental methods for proving the existence of genealogical relationships may be found easily; systematic breeding and a well-developed administration is the only means of getting an insight into genealogical relationship. Demonstration of genotypic relationship however is not so easy; till nowadays we have only breeding methods, and we can state genotypic relationship only by means of systematic crossings. This method however is in its possible usefulness very limited; in practical sense it has been thus far sufficient, but the exact genetics, trying to find a more or less mathematical judgment of the genotype of a given individual cannot be content with this in many cases inadequate method; we must try to find another, perhaps chemical method, to determine the genotype of an organism. A critical and more refined judgment of methods for finding bloodrelationship, but then applied to gametes, may in future lead to great results.—*M. J. Sirks.*

1128. Sirks, M. J. **Uit het Instituut voor veredeling van landbouwgewassen. Vergelijking van gerst- en tarwerassen, van het Instituut afkomstig met andere voortreffelijke rassen van deze gewassen. 1915–1917.** [**From the Institute for the Improvement of Agricultural plants. Comparison of barley and wheat varieties originating from the Institute with other superior races of these plants. 1915–1917.**] Med. Landbouwhoogeschool Wageningen **14**: 1–34, 210–232. 1918.—Gives only some reports of comparisons of newly bred varieties of wheat (Millioen III and Imperiaal IIa) with the well-known Wilhelmina, that show the great value of these varieties of wheat. The results of tests with new races of barley (Pollux and Castor) were less favorable. —*M. J. Sirks.*

1129. Snell, K. **Farbenänderung der Kartoffelblüte und Saatenanerkennung.** [**Color changes of the potato blossom and the recognition of varieties.**] Der Kartoffelbau **1919**: 1–3. 1919.—Author calls attention to importance laid on color in recognition of varieties but a questionnaire proved that with many varieties color variations occur that are "spontaneous" while with others they appear as non-hereditary "modifications"; these are, of course, not distinguishable by inspection. Author thinks that all varieties possess power of pigment formation and bloom white if conditions for development are absent. It is suggested that in judging the variety, plants with deviations in flower color should be especially attended to only when they also vary in other respects. [From anonymous review in Zeitschr. Pflanzenzücht. **7**: 137–138. Dec., 1919.]—*J. P. Kelly.*

1130. Sommer, K. **Über Kartoffelzüchtung und vergleichende Anbauversuche mit Neuzüchtungen auf der Domäne Ellischau.** [**Potato breeding and comparative cultural tests of new varieties on the Ellischau estate.**] Nachr. Deutsch. Landw. Ges. Österr. **1919**: 190–193. 1919. —Calls attention to hybridization and plant-selection work undertaken, and special mention is made of large yields of single plants. [From anonymous review in Zeitschr. Pflanzensücht. **7**: 138. Dec., 1919.]—*J. P. Kelly.*

1131. Stahel, G. **Eerste verslag over de werkzaamheden ten behoeve van de selectie van Koffie en Cacao.** [**First report on the effectiveness of selection in coffee and cacao.**] Dept. Landbouw. in Suriname, Paramaribo, Bull. **36**. *23 p.* 1919.—Coffee and cocoa plants generally more or less heterozygous and efforts at vegetative multiplication of good plants are

described. Author records contribution of a fund by a Surinam breeding association by which a selection inspector for the plantations is supported. Figures are given on varying productivity of coffee and cocoa trees with number of individuals selected as mother plants. Methods of vegetative propagation are described. [From anonymous review in Zeitschr. Pflanzenzücht. 7: 138–139. Dec., 1919.]—*J. P. Kelly.*

1132. Tammes, T. **De leer der erffactoren en hare toepassing op den mensch. Rede, uitgesproken bij het aanvaarden van het ambt van buitengewoon hoogleeraar aan de Rijks-universiteit te Groningen. [The theory of hereditary factors and its applicability to man. Address delivered on assumption of the office of Professor Extraordinarius in the State University at Groningen.]** *24 p.* Wolters: Groningen, 1919.—A discussion of the principles of factorial constitution of organisms; the writer thinks them as Morgan does, localized in the chromosomes, according to the linkage of all *Drosophila*-factors in four groups and of all *Pisum*-factors in seven groups, in harmony with their haploid chromosome numbers 4 and 7. If then these principles might be applied to improvement of the human race, the great number of chromosomes in man (diploid 47 and 48) is a difficult hindrance for locating the various human hereditary factors in the chromosomes; the inheritance of human characters is very complicated and it is therefore impossible to give certain indications for human amelioration. But possible is the amelioration of circumstances of life for man; it changes only the phenotype not the genotype, but it is the only thing we can obtain in the nearest future.—*M. J. Sirks.*

1133. Thomson, J. Arthur. [French rev. of: Larger, R. **Théorie de la contre-évolution, ou dégénérescence par l'hérédité. [Theory of retrogressive evolution, or degeneration by heredity.]** *xiv + 405 p., 21 fig.* Félix Alcan: Paris, 1919.] Scientia **14:** 52–54. 1920.

1134. Thomson, J. Arthur. [French rev. of: Hegner, R. W. **The germ-cell cycle in animals.** *x + 346 p., 84 fig.* Macmillan & Co.: New York, 1914.] Scientia **14:** 51–52. 1920.

1135. Tjebbes, K., and H. N. Kooiman. **Erfelijkheidsonderzoekingen by boonen. III. Albinisme. [Hybridization experiments with beans. III. Albinism.]** Genetica **1:** 532–538. *1 pl., 3 fig.* Nov., 1919.—The authors have made some experiments with a strain of albino-throwing beans of the species *Phaseolus vulgaris*. The seeds of one plant, E. 9. 1916, sown in 1917, gave 26 green-leaved plants and 8 ivory-white ones, indicating monohybrid segregation. 1918 the rest of the seeds from E9. 1916, produced again about three green seedlings: 1 white one.—1918 albinotic seedlings were grafted on normal green ones. The best method proved to be splice-grafting, the hypocotyl of the albinotic seedling and a node of the green one being cut across diagonally and united by means of a string of wet raffia. The albino then can profit from the food present in the cotyledons and of the green leaf, left to the node.—In this way two plants in 1918 and two descendants of one of these in 1919 were raised to maturity and all of them produced the first, simple, leaves without the least trace of green color, developing little patches of chlorophyll on the compound leaves and green stripes on the pods.—As to the origin of this strain the authors venture to suggest, that it may have arisen from the cross of a flower on an albinotic branch with a flower on a normal one, of a sectorially chimaeric plant. Also the loss of the factor, that enables the plant to make chlorophyll, may have taken place in one flower. The question too arises, whether the green patches on the leaves and the stripes on the pods are caused by some chemical influence of the normal plant or that we deal with an extreme case of variegation. To clear this and other questions the work will be continued.—*H. N. Kooiman.*

1136. Urban, J. **Hochpolarisierende Rübe und ihre Nachkommenschaft. [High-polarizing beets and their progeny.]** Zeitschr. Zucker-Industr. Böhmen **42:** 387–391. 1919.—Three groups of mother beets whose average sugar content were 20.28 per cent, 20.66 per cent and 21.14 per cent respectively gave progeny whose averages were 21.47 per cent, 21.29 per cent and 21.59 per cent sugar. Three generations showed no noticeable influence of small differences in sugar percentage of mother beets upon averages of progeny. Same mother beets seriated for weights showed a negative correlation between size and sugar percentage. [From anonymous review in Zeitschr. Pflanzenzücht. **7:** 141–142. Dec., 1919.]—*J. P. Kelly.*

1137. Urban, J. **Über die Farbe des Rübenkrautes früh und spätreifender Rüben. [On the color of the plant of early and late-ripening beets.]** Zeitschr. Zuckerrübenindus. Böhmen **42**: 281–297. 1918.—See Bot. Absts. 6, Entry 1057.

1138. van Herwerden, M. A. **Over eenige nieuwe opvattingen in de celleer. [On some new discoveries in cytology.]** Genetica **1**: 130–133. Mar., 1919—A discussion of the continuity of the nucleus, for long years an axiom of the cytology, but now by the beautiful researches of Buchner (Arch. f. microscop. Anat. **91**: 1. 1918) no longer an axiom but a subject of research that may perhaps give us a new view upon the ontogenetic origin and perhaps the phylogenetic origin of this most important part of the cell. The basiphile grains in the eggs of hymenopteres giving rise to accessory nuclei will give still much material for research.—*M. J. Sirks.*

1139. Volkart A. **40. und 41. Jahresbericht. Schweizerische Samenuntersuchungs- und Versuchsanstalt in Oerlikon-Zürich. [40th and 41st Annual Reports. Swiss seed control and experiment station in Oerlikon-Zurich.]** Landw. Jahrb. Schweiz. **1919**: 1–40. 1919.—The station's breeding work on cereals, beans and beets is reviewed. The isolation of strains by single-progeny tests and also improvement by repeated selections are mentioned. In 1913 hybridization was commenced. [From anonymous review in Zeitschr. Pflanzenzücht. **7**: 142. Dec., 1919.]—*J. P. Kelly.*

1140. von Caron-Eldingen. **Physiologische Spaltungen ohne Mendelismus. [Physiological segregation without Mendelism.]** Deutsch. Landw. Presse **1919**: 515–516. 1919.—Author discusses thick-eared wheat infested with rust spores. The grain, whether treated or not gave rise to some long-eared plants. In plats with untreated grain only the long-eared were rusty. Author assumes a physiological segregation, not Mendelian in character, which conditions the long-eared character and the susceptibility. [From anonymous review in Zeitschr. Pflanzenzücht. **7**: 114–115. Dec., 1919.]—*J. P. Kelly.*

1141. von Ryx, Georg. **Zahlenmässige Bestimmung der Kornschönheit bei Braugerste. [Numerical determination of beauty of grains in brewing barley.]** Zeitschr. Pflanzenzücht. **6**: 109–166. *2 fig.* June, 1918.

1142. von Tschermak, E. **Beobachtungen über anscheinende vegetative Spaltungen an Bastarden und über anscheinende Spätspaltungen von Bastardnachkommen speziell Auftreten von Pigmentierungen an sonst pigmentlosen Deszendenten. [Observations on apparent vegetative splitting in hybrids, and on apparently belated splitting in hybrid offspring, especially the occurrence of pigmentation on otherwise pigmentless descendants.]** Zeitschr. indukt. Abstamm. Vererb. **21**: 216–232. *1 fig.* Nov., 1919.—Four cases of bud mutation in beans, barley, and peas, are given which occurred after a cross as follows: (1) a dark-seeded bean which had bred true for 8 generations following a cross of dark- and light-seeded Scarlet Runner beans gave one plant with both typical seeds and aberrant light-colored seeds with distinct pattern; (2) a low-growing white-flowered plant resulting from a cross of *Phascolus multiflorus* × *P. vulgaris* again crossed by a low-growing red-flowered plant from same source gave one plant in F_1 with short stature during the summer but which late in the season began to climb; (3) a barley variety with compact spikes crossed by a normal sort gave one plant in F_1 with two stalks, one of which had a normal spike the other compact; (4) a pea with yellow cotyledons crossed by another yellow-cotyledon kind gave one plant with one fully matured green seed among the usual yellow seeds. Such cases as these author considers to be vegetative segregation and compares them with two instances of seed segregation of complex nature in which appearance of new forms is delayed as (a) two white-flowered bean plants of complex hybrid ancestry gave red flowers in F_1 with normal segregation in F_2. (b) a bean plant with seeds having green cotyledons and green seed coats which bred true for 4 generations following a cross of a green by yellowish-brown-coated variety produced one plant with all seeds having colored markings. Author holds that there is a relation between such delayed segregations which at present cannot be distinguished from complex Mendelian phenomena

and the cases of vegetative segregation reported by himself and by others. He considers that an association or disassociation during growth whereby factors may become active or inactive may account for these observed facts.—*D. F. Jones.*

1143. von Ubisch, G. **Gerstenkreuzungen.** [Barley crosses.] Landw. Jahrbücher **53**: 191-244. *3 pl., 18 fig.* 1919.—Aim of present contribution is to induce breeders to pay more attention to the laws of hybridization. Author discusses behavior in crossing of several barley traits, such as basal bristles, dentation of lower glume, thickness of ear, number of rows in head, and others. He also treats procedure for quantitative characters, linkage, and abnormalities. At the close an example is taken up to show how breeder may achieve his aim more quickly by attending to laws of heredity. [From anonymous review in Zeitschr. Pflanzenzücht. **7**: 141. Dec., 1919.]—*J. P. Kelly.*

1144. Webber, H. J. **Necessity of selecting stocks in citrus propagation.** California Citrograph **5**: 177, 198-199. *1 table, 5 fig.* Apr., 1920.—A brief restatement of the main features of the bulletin abstracted in Bot. Absts. 5, Entry 498.—*H. B. Frost.*

1145. Wilson, E. H. **A new hybrid lily. L. imperiale.** Gard. Chron. **67**: 255. *1 fig.* May 22, 1920.—Many hundred plants of two [presumably hybrid] lilies, *L. regale* Wils., and *L. Sargentiae* Wils., were grown near together in Massachusetts. Among seedlings of *L. regale* there were noticed three intermediate plants. These were presumed to have been due to pollination by *L. Sargentiae.* One of them is figured and described.—*John Belling.*

HORTICULTURE

J. H. Gourley, *Editor*

FRUITS AND GENERAL HORTICULTURE

1146. Calvino, Mario. **Propagación de las plantas por extaca.** [Propagation of plants by cuttings.] Revist. Agric. Com. y Trab. **3**: 4–9. *18 fig.* 1920.

1147. Cooper, J. C. **Improving the seedling walnut.** Better Fruit **14**[6]: 7, 36. Dec., 1919.—Scoring cards for both the tree and the nut are given together with a brief discussion of the value of obtaining a good seedling of English walnut for commercial propagation in the Northwest. The author is a walnut grower of long experience.—*A. E. Murneek.*

1148. Crandall, C. S. **The apple cross—Tolman × Malus Toringo.** Proc. Amer. Soc. Hortic. Sci. **16**: 60–66. (1919) 1920.—Tolman, a well known standard variety of apples was crossed with a dwarf form of *Malus Toringo.* The seeds from the resulting fruits were planted and hybrid trees grown. In general appearance the trees strongly resemble the male parent except that they are not dwarf in habit and greatly exceed *Malus Toringo* in vigor of growth. The fruit of the hybrids bears no resemblance to those of either parent; they are intermediate in size, but to occupy a median position, they would have to be many times heavier and have the diameter more than doubled. While the color was a uniform yellow, it was not the yellow of either Tolman or *Malus Toringo,* but rather a dark dull orange color. The author states that the outstandng fact regarding the group of seedlings is the extent of the domination of the dwarf, small fruited male parent and the corresponding suppression of resemblance to the mother plant. He states, "This dominance of *Malus Toringo* characters is indicative of a degree of stability and fixity only acquired by existence through many generations and we must assume this plant to be a true species and very near if not identical with the wild type." [See also Bot. Absts. 6, Entry 1653.]—*E. C. Auchter.*

1149. Curtis, Otis F. **The upward translocation of food in woody plants. II. Is there normally an upward transfer of storage foods from the roots or trunk to the growing shoots?** Amer. Jour. Bot. **7**: 286–293. 1920.—See Bot. Absts. 6, Entry 1310.

1150. Daniel, Lucien. **Réactions antagonistiques et rôle du bourrelet chez les plantes greffées.** [Antagonistic reactions and the rôle of the cushion (bourrelet) in grafted plants.] Compt. Rend. Acad. Sci. Paris 170: 285–287. 1920.—The anatomical modifications in the region of the graft are held to be due primarily to the cushion (bourrelet) developed at the union of stock and scion. This causes a diversion of conductive processes, altering the distribution of materials. Some substances are found to pass, others will not pass, and other substances are chemically changed before passage. Thus the biologic nature of the stock and scion is considered as changed. This tissue is also concerned in the development of all excrescences at this level, including roots of the scion, shoots of the stock and complex tissues in graft hybrids or chimeras when such occur.—*C. H. and W. K. Farr.*

1151. Duarte d'Oliveira, Jose. **Sur la transmission de la fasciation et de la dichotomie à la suite de la greffe de deux vignes portugaises.** [The transmission of fasciation and dichotomous branching through the grafting of two Portuguese varieties of grapes.] Compt. Rend. Acad. Sci. Paris 170: 615, 616. 1920.—A scion of Albino de Souza, a variety of *Vitis vinifera*, which is never fasciated nor branches dichotomously was grafted to a stock of Goncalo Pires, another variety of the same species, which has fasciation and dichotomy as a permanent characteristic. Shoots of the scion developed later were found to be fasciated and dichotomous like those of the stock.—*C. H. and W. K. Farr.*

1152. Enfer, V. **Jardin fruitier d'amateur: Dispositions a observer pour la plantation.** [The amateur fruit garden. Points to be observed in planting.] Rev. Hortic. [Paris] 92: 16–18. Jan., 1920.—General discussion on preparation of soil, transplanting, selection of types of trees to be planted, and care following planting.—*E. J. Kraus.*

1153. Florin, Carl and Rudolf. **"P. J. Bergius," en ny Applesort.** ["P. J. Bergius," a new variety of apple.] [Swedish] Acta Horti Bergiani [Stockholm] 6^5: 1–7. *Fig. 1. Pl. 1.* 1918.—A description and history of a new variety of apple, with beautiful crimson fruit.—*P. A. Rydberg.*

1154. Fries, Rob. E. **Strödda iaktagelser öfver Bergianska Trädgårdens gymnospermer.** [Scattered observations concerning the gymnosperms in Hortus Bergianus.] Acta Horti Bergiani [Stockholm] 6^4: 1–19. *1 pl.* 1919.—See Bot. Absts. 5, Entry 364.

1155. Gardner, V. R. **Results of bud selection investigations at the Missouri and Oregon experiment stations and their interpretation.** Proc. Amer. Soc. Hortic. Sci. 16: 66–70 (1919). 1920.—Scions were taken in 1895, at the Missouri station from two bearing Ben Davis trees and from these other trees were propagated. One of the Ben Davis trees, from which the scions were taken, had been a heavy and regular producer of high grade fruit, while the other had been a light producer of fruit inferior in size and color. The crops resulting from these two groups of propagated trees were measured accurately. The author states, "The results of this particular experiment may be summarized by stating that the trees propagated from the poor parent were equal to those propagated from the good parent in productiveness, regularity of bearing and grade of fruit."—Another bud selection experiment was made at the Missouri station with strawberries. Runners were taken from the six most productive individuals in the station's plot of a standard variety. Records of yields were kept, and each year for ten years, plants from the highest yielding and low yielding plants were selected and fruited. Nothing was gained or lost by selection. –In 1913, at the Oregon station, plus and minus selections were made of four varieties of strawberries. Daughter plants were fruited in 1915, and for three succeeding generations, with the same results as found at the Missouri station. The low yielding Wilson mother plant was a poor plant maker. This characteristic was exhibited by each group of daughter plants throughout their life. At the same time as the above study, selections were made from productive and barren daughter plants of two station seedlings. The resulting records showed that the high yielding selections remained at least above the normal, while the selections from the barren plants continued to be nearly barren. In this case, a strain of strawberries, inferior to the normal was isolated. The author states, "From

a *practical* viewpoint, all bud selection could accomplish would be to keep the variety up to its own standard by the weeding out of an infertile or semi-barren strain."—The behavior of the runner propagated daughter plants of some strawberry seedlings were studied at the Oregon station, which gave evidence of degeneracy or "running out." Briefly, this took three forms: (a) A more or less complete loss of ability to produce fruit though vegetative vigor remained unimpaired. (b) A partial loss of ability to produce runners. (c) A marked reduction in vegetative vigor, resulting in weak degenerate plants. This degeneration may involve the entire stock of a variety, that is being grown under a given set of conditions or only a part of that stock.—In one case studied, plants from a certain seedling, which had apparently run-out at the end of the second season, were planted in a new location. Gradually they regained their vigor and yielded well, indicating that a degenerate strain may return to the normal, from which it sprang. The author also draws attention to the fact, that occasionally bud variation may furnish the starting point for real variety improvement. [See also Bot. Absts. 6, Entry 1673.]—*E. C. Auchter.*

1156. Lemée, E. **Chardon géant de Salonique.** [**A giant thistle from Salonica.**] Rev. Hortic. [Paris] **92**: 8. Jan., 1920.—This species is regarded as a promising ornamental for large open spaces, since in the second year from seed the plants attained a height of 2.30 to 2.75 meters. Each bore approximately 40 flowerheads arising from, and symmetrically arranged about a main central stalk in the form of a pyramid. The purple flowers began to appear in early August, each persisted for 15 or 18 days, thus making a blooming period of about six weeks. The plants appear to be hardy without protection. The species has been identified as *Onopordon illyricum* Linné, var. *Cardunculus*, Boissier.—*E. J. Kraus.*

1157. Lesourd, F. **Les plantes potagères à travers les ages.** [**Culinary plants grown in various centuries.**] Rev. Hortic. [Paris] **92**: 12–13. Jan., 1920.—A list of many species and varieties of plants arranged according to the general time of their introduction, from the fourteenth to the twentieth century inclusive.—*E. J. Kraus.*

1158. Morris, O. M. **Practical pruning as applied to apple and pear trees (Part One).** Better Fruit **14**[6]: 3–5. Dec., 1919.—Practical and definite advice is given as to methods of procedure in pruning apple and pear trees. Both young and mature trees are considered.—*A. E. Murneek.*

1159. Morris, O. M. **Practical pruning as applied to apple and pear trees (Part two).** Better Fruit **14**[7]: 7–10. Jan., 1920.—The season of pruning, pruning of different varieties of apples, treatment of pruning wounds, and repairing of injured trees are the topics considered in this part of the article.—*A. E. Murneek.*

1160. Pearcy, Knight. **The cultivation of filberts in the Northwest.** Better Fruit **14**[7]: 3–5. Jan., 1920.—This is a complete summary of the history and present status of filbert growing in the Northwest. Particular emphasis has been laid upon the commercial value of the following varieties: Barcelona, Du Chilly and Davidiana. Personal opinions of successful filbert growers are taken into account. The question of self-fertility and cross-pollination of the different varieties is considered in full.—*A. E. Murneek.*

1161. Schimpff, Wm. E. **Development of the cranberry industry in Oregon.** Better Fruit **14**[8]: 7–9. Feb., 1920.—A complete and detailed account of the history and present status of the cranberry industry in the Northwest with special reference to the Cullaby Lake district in Oregon.—*A. E. Murneek.*

1162. Shamel, A. D. **Investigation with citrus fruits.** Proc. Amer. Soc. Hortic. Sci. **16**: 70–76. (1919) 1920.—This paper gives a general idea of how the investigations in Citrus improvement have been carried on in California by members of the U. S. Dept. Agric. A survey of the citrus orchards was first made and favorably located orchards were selected in which to make the studies. Individual tree performance records were kept in the various

orchards, generally 100 trees in each orchard being used. A great many individual variations were found, some had to do with inferior fruit, some with growth habit of the trees, some with foliage, etc. Many strains of each of the citrus varieties studied were found. By these studies, the good and bad trees in different orchards were found. From the most productive trees, which usually were of the best strain, selections of parent trees, as sources of bud wood for propagation were made. As a rule, the extent of the occurrence of trees of the off-type strains increased with the numbers of bud generation from the original parent trees of the variety.—Under the old methods, buds were selected from vigorous growing, generally non-fruit-bearing wood, which generally came from the most vigorous and vegetative strains of trees, which were generally least productive and bore inferior fruit. At the present time, fruit bearing wood from productive trees are selected to get the bud wood and by this means this tendency toward the introduction of vegetative strains is being largely, if not wholly, overcome. The author states that experimental propagations have been made of all of the important bud variations studied in the course of the investigations and enough evidence has been secured from these propagations to warrant the statement that all of the important variations have been isolated through bud selection. He states, "The deisrable variations have been propagated and planted on an extensive commercial basis by citrus growers in Southern California so that at the present time there are thousands of acres of these trees available for study."—The author thinks that one of the most important results of the investigations has been the introduction of practical methods for keeping individual tree records in orchards. As a result of such records accurate knowledge has been obtained as to the effect of various pruning, cultural and fertilizer practices in crop yields, in addition to the bud selection studies.—*E. C. Auchter.*

1163. Tesnier, F. **Culture du Loganberry aux États-Unis.** [Loganberry culture in the United States.] [Rev. of: Darrow, G. M. Culture of the Logan Blackberry. U. S. Dept. Agric. Farmers Bull. 998. 1918.] Rev. Hortic. [Paris] 92: 14–16. *Fig. 3–4.* 1920.

1164. Vincent, C. C. **Results of pollination studies at Idaho University.** Better Fruit 14[8]: 11–15. *Tables 1–6.* Feb., 1920.—This is a summary of pollination studies with the apple as conducted at the Idaho Agric. Exp. Sta. during the seasons of 1911, 1912 and 1914. A majority of apple varieties were found to be practically self-sterile in Idaho. Methods of determination of self sterility in apples are discussed and the results of two, the paper bag and cloth tent methods, are compared. Self-fertilized fruits were found to contain fewer or no seeds at all, as compared with cross fertilized fruits. Further work showed that crosses of certain varieties gave better results than others; all varieties of apples will not cross indiscriminately with each other. Practical application of the results obtained is suggested.—*A. E. Murneek.*

FLORICULTURE AND ORNAMENTAL HORTICULTURE

1165. Acosta, Celsa. **El Tararaco.** [Amaryllis.] Revist. Agric. Com. y Trab. 3: 56. *1 fig.* 1920.—A description of *Hippeastrum reginae* Linn. as a garden plant.

1166. Anonymous. **A Shakespearean garden.** Nature 104: 441–442. 1920.—See Bot. Absts. 6, Entry 1440.

1167. Laumonnier, Férard E. **Plantes de rocailles et plantes de bordures herbacées.** [Plants for rockeries and herbaceous borders.] Rev. Hortic. [Paris] 92: 19–20. Jan., 1920.—General statement urging more general planting of native and hardy species or varieties.—*E. J. Kraus.*

1168. McFarland, J. Horace. **Roses remade for America.** Garden Mag. 31: 93–98. April, 1920.—Mentions men who have done most to improve roses in America and discusses their work in connection with the varieties originated or improved by each.—*H. C. Thompson.*

1169. Mottet, S. **Les tulipes Darwin.** [Darwin tulips.] Rev. Hortic. [Paris] 92: 10–11. *1 pl. (colored).* Jan., 1920.—This class of tulips was first exhibited in France in 1889 by Kre-

lage and Sons, of Haarlem. Because of the large size, form, consistency, color, and keeping qualities of the flowers, the long stems on which they are borne, and the general hardiness of the plants, the several varieties are being widely planted by amateurs. Typically this class of tulips should be of solid color; the variegated forms should be classed as Rembrandts. Most of the varieties, however, are apt to become variegated in color under certain climatic conditions or if allowed to remain for some time without transplanting to a new soil. The more intense colors are least subject to change whereas the violets and lilacs are most likely to become modified.—*E. J. Kraus.*

1170. Pinelle, J. **Berberis Wilsonae Hemsley.** Rev. Hortic. [Paris] **92**: 8–10. *2 fig.* Jan., 1920.—This species was introduced in 1904 by E. H. Wilson, from the mountains of Se Tchuen, western China. It is a beautiful shrub, scarcely more than a meter in height, hardy, interesting for its almost persistent foliage, becoming yellow-red in November and December, and its numerous coral red fruits which are conspicuous from October to severe cold weather. —*E. J. Kraus.*

1171. Wilson, E. H. **The romance of our trees VII. The Beeches.** Garden Mag. **31**: 115–119. *4 fig.* 1920.—See Bot. Absts. 6, Entry 1471.

1172. Wilson, E. H. **The romance of our trees IX. Whence came the common fruits.** Garden Mag. **31**: 259–263. 1920.—See Bot. Absts. 6, Entry 1472.

1173. Wilson, E. H. **The romance of our trees X. The Lombardy poplar and the Babylon willow.** Garden Mag. **31**: 317–320. *5 fig.* 1920.

VEGETABLE CULTURE

1174. Enfer, V. **Premiers semis de pois. [The first sowings of peas.]** Rev. Hortic. [Paris] **92**: 20–21. Jan., 1920.—General directions are given regarding time of planting, preparation of soils, selection of varieties, and harvesting. With the approach of warm weather the vines are apt to become diseased. Copious watering and the application of copper sulfate (2 grams per litre of water) will aid in preventing this difficulty, but after April 1 it is preferable to sow varieties having wrinkled seeds since they will resist the bad effects of warm weather to a greater degree than will the round seeded types.—*E. J. Kraus.*

HORTICULTURE PRODUCTS

1175. Baldasarre, Juan F. **Los usos del maní. [Uses of peanuts.]** Revist. Agric. Com. y Trab. **3**: 20–22. *1 fig.* 1920.

1176. Cruess, W. V., A. W. Christie, and F. C. H. Flossfeder. **The evaporation of grapes.** California Agric. Exp. Sta. Bull. **322**: 421–471. 1920.—Plans, cost, and general specifications of an evaporator of the horizontal tunnel air-blast type used successfully in the drying of grapes and prunes are given. Dipping of grapes in dilute boiling lye solution approximately doubled the rate of drying. No constant difference in yield could be found in sun-drying and evaporation. Unless heavily sulfured, dried grapes of 30 per cent or more moisture had poor keeping qualities. When dried, wine grapes could be seeded successfully but the loss during the process was excessively large.—*A. R. C. Haas.*

1177. Cruess, W. V. **Unfermented fruit juices.** California Agric. Exp. Sta. Circ. 220. *32 p.* 1920.—A full description of the methods and equipment necessary in the preparation of unfermented fruit juices.—*A. R. C. Haas.*

1178. Cruess, W. V. **Commercial production of grape syrup.** California Agric. Exp. Sta. Bull. **321**: 401–416. 1920.—The method and the equipment necessary for the manufacture of grape syrup is described. The production of syrup from grapes presents a most promising method of profitably utilizing the crop of wine grapes in California.—*A. R. C. Haas.*

1179. Ventre, Jules. **Exploitation et utilization des marcs de raisins.** [**The utilization of grape pomace.**] Ann. Ecole Nation. Agric. Montpellier, 17: 1–70. *5 fig.* (July, 1918) July, 1919.—The utilization of grape pomace can be developed into a paying industry in the grape producing parts of France. Methods are given for extracting alcohol, tartaric acid and oil, and for utilizing the pomace as an animal feed and fertilizer.—*F. F. Halma.*

MORPHOLOGY, ANATOMY AND HISTOLOGY OF VASCULAR PLANTS

E. W. Sinnott, *Editor*

1180. Artschwager, Ernst F. **On the anatomy of Chenopodium album L.** Amer. Jour. Bot. 7: 252–260. *2 pl., 3 fig.* 1920.—Author reviews previous work on the anatomy of the Chenopodiaceae. In the species studied he finds that in very young stems there is a ring of collateral vascular bundles; but a periodically active extrafascicular cambium soon develops outside of these, which lays down xylem and conjunctive tissue centripetally and, in restricted regions, lays down phloem centrifugally. The xylem of a bundle is usually all produced before any of its phloem develops. Where phloem arises the cambium is "used up" and disappears. The continuity of the cambium ring is maintained, however, by the progressive formation of new cambium outside the phloem group. An island of intraxylary phloem is thus produced, and as a result the vascular ring consists of successive series of xylem bundles and islands of intraxylary phloem, the whole embedded in a mass of lignified conjunctive tissue. That part of the conjunctive tissue which extends radially between the bundles may function as ray tissue though it is not such morphologically. Contrary to the results of previous workers, the author finds the chief element of the phloem to be the sieve tube and its companion cell, phloem parenchmya being of only secondary importance. The ontogeny of the stem structure of this species shows a striking similarity to the structure of the root of the sugar beet.—*E. W. Sinnott.*

1181. Carano, E. **Nuovo contributo alla embriologia delle Asteraceae.** [**Contribution to the embryology of the Asteraceae.**] Atti R. Accad. Lincei Rend. (Cl. Sci. Fis. Mat. e Nat.) 28[1]: 412–415. 1919.—A microscopical examination of the flowers of *Erigeron Karvinskianus* var. *mucronatus* shows that the flowers have no need of pollination to mature achenes and that this species may be apogamic. The nuclear phenomena are described.—*F. M. Blodgett.*

1182. Daniel, Lucien. **Réactions antagonistiques et rôle du bourrelet chez les plantes greffées.** [**Antagonistic reactions and the rôle of the cushion (bourrelet) in grafted plants.**] Compt. Rend. Acad. Sci. Paris 170: 285–287. 1920.—See Bot. Absts. 6, Entry 1150.

1183. Holm, Theo. **Internal glandular hairs in Dryopteris.** Rhodora 22: 89–90. *2 fig.* 1920.—An account of the occurrence of these structures in the intercellular spaces of the leaf parenchyma in *Dryopteris Filix mas* (L.) Schott, *D. marginalis* (L.) Gray, *D. spinulosa* (O. F. Mull.) Kuntze, and *D. cristata* (L.) Gray. An examination of other species of this genus and also of other genera failed to disclose similar structures and the writer suggests that their presence in some species and absence in others might indicate some generic distinction.—*James P. Poole.*

1184. Loeb, J. **The nature of the directive influence of gravity on the arrangement of organs in regeneration.** Jour. Gen. Physiol. 2: 373–386. 1920.—See Bot. Absts. 6, Entry 1354.

1185. Soueges, R. **Embryogénie des Chénopodiacées. Développement de l'embryon chez le Chenopodium Bonus-Henricus L.** [**Embryogeny of the Chenopodiaceae. Development of the embryo of Chenopodium Bonus-Henricus L.**] Compt. Rend. Acad. Sci. Paris 170: 467–469. 1920.—The fertilized egg by two successive divisions gives rise to a row of four cells, each of which divides to form a distinct portion of the mature embryo. This early differentiation is unlike the condition found in the Polygonaceae, as is also the origin of the hypophysis from

the hypobasal cell of the four-celled stage. The Chenopodiaceae agree with the Polygonaceae, however, in that the basal cell of the two-celled stage contributes to the hypocotyl, and in that the cortex initials arise in the tissue produced from the hypobasal cell of the tetrad stage. —*C. H. and W. K. Farr.*

1186. Ulehla, Vladimir. Studien zur Lösung des Windesproblems. [Wind problems.] Bot. Notiser [Lund] **1920**: 1–30. 1920.

1187. Wells, B. W. (**Note without title.**) Plant World **22**: 251–252. *2 fig.* 1919.—An abnormal inflorescence of *Allium mutabile* is described. Certain stamen primordia had developed flowers instead of stamens. It is suggested that the peculiar development may give a clue to the development of the compound umbel as a type of inflorescence. —*Charles A. Shull.*

1188. Wells, B. W. **Early stages in the development of certain Pachypsylla galls on Celtis.** Amer. Jour. Bot. **7**: 275–285. *1 pl.* 1920.—The galls produced on leaves of species of *Celtis* by *Pachypsylla mamma* and *P. asteriscus* were studied. The life history of the insects is briefly outlined and the histological phenomena accompanying gall formation described. The newly hatched nymph inserts its proboscis into the upper side of the leaf and remains in this position during gall formation. A thin sheath is laid down around the seta by the cytoplasm of the cells which it penetrates. Through hypertrophy of the epidermis and mesophyll cells on the opposite (lower) side of the leaf, a downward evagination is produced which lowers the insect into the body of the leaf. A "cover-cone" now springs up on the upper surface from tissue adjacent to the larva and rapidly grows over the insect, enclosing it in the gall. Chloroplasts degenerate and nuclei increase in size in the zone below the larva. Multinucleate cells appear in the tissues of the floor of the larval chamber, and the author believes their nuclei to arise amitotically. The grand period of growth for the gall is early in its existence, while that for the larva itself does not come until the gall is more than half grown. No clue was obtained as to the nature of the stimulus which causes the development of these very specific gall structures.—*E. W. Sinnott.*

MORPHOLOGY AND TAXONOMY OF ALGAE

E. N. Transeau, *Editor*

1189. Anderson, Emma N., and Edna R. Walker. **An ecological study of the algae of some sandhill lakes.** Trans. Amer. Microsc. Soc. **38**: 51–84. *Pl. 3–12, 17 fig.* 1920.

1190. Butterfield, W. M. **A vegetable manufacturer of decorated glass.** Sci. Amer. **122**: 116, 122–124. *1 fig.* 1920.—Description of diatoms in popular style.—*Chas. H. Otis.*

1191. Carter, Nellie. **Studies on the chloroplastids of Desmids III. X. The chloroplasts of Cosmarium.** Ann. Botany **34**: 265–286. *Pl. 10–13, 88 fig.* 1920.—Most of the species of Cosmarium examined have axile chloroplasts in each semicell; in a few the chloroplasts are parietal. The number of pyrenoids depends upon the individual, and at any time a group of pyrenoids may be formed where originally there was only one.—*E. N. Transeau.*

1192. Chodat, R. **Sur un Glaucocystis et sa position systematique. [Concerning Glaucocystis and its systematic position.]** Bull. Soc. Bot. Genève **11**: 42–49. *2 fig.* 1919.—From a careful study of the life history of a species of *Glaucocystis* the genus is placed in a new family of *Dinoflagellateae*. The new family *Glaucocystaceae* has the following characteristics: the cellulose membrane has internal polar thickenings; a large nucleus with a nucleolus, chromatophores strap-shaped and peripheral in distribution or arranged in two radiating groups with a clear space on one side of the cell between the two groups of chromatophores which makes the cells asymmetrical. Multiplication takes place as in *Oocystis*. The plants are abundant on mosses and *Equisetum* growing in small streams.—*W. H. Emig.*

1193. Coker, W. C. **A parasitic blue-green alga.** Jour. Elisha Mitchell Sci. Soc. **35**: 9. 1919.—See Bot. Absts. 5, Entry 2026.

1194. Ducellier, F. **Deux Desmidiacees nouvelles. [Two new Desmids.]** Bull. Soc. Bot. Genève **11**: 117–121. *2 fig.* 1919.—*Docidium undulatum* Bail. var. *bisannicum* n. var. and *Cosmarium benedictum* n. sp. were found in Switzerland.—*W. H. Emig.*

1195. Du Rietz, Einar. **Studier öfver de skandinaviska Laminaria-arterna. [Studies of the Scandinavian species of Laminaria.]** [Swedish.] Bot. Notiser [Lund] 1920: 41–49. 1920. —The author admits 6 species of *Laminaria* recorded for Scandinavia, belonging to two distinct groups. The first group contains only *L. sacharina* (L.) Lamour., which he dismisses with the remark that "he has nothing of importance to communicate." Of the second group, *L. nigripes* J. G. Agardh and *L. gunneri* Foslie have been found only on the northern coast of Norway, the first only as thrown up on the beach and very doubtfully Scandinavian. The second, the author had not had any chance to study. There were, therefore, only three left to be extensively treated: 1. **L. scoparia** (Ström) Du Rietz, nov. comb. [*L. hyperborea* (Gunner) Foslie; *L. digitata* (L.) Lamour.]; 2. **L. digitata** (Huds.) Edm. [*L. flexicaulis* LeJolis]; and 3. **L. cucullata** (LeJolis) Foslie.—*P. A. Rydberg.*

1196. F., H. [Rev. of: Gepp, A., E. S. Gepp, and Mme. Paul Lemoine. **Marine algae.** (Melobesiae by Mme. Lemoine.) Botany, Part II. In British Antarctic ("Terra Nova") Expedition, 1910. Nat. Hist. Report. P. 17–28. No date.] New Zealand Jour. Sci. Tech. **1**: 251. July, 1918.—Records one new species, *Melobesia Geppii* Lemoine, which was collected at Spirits Bay, North Cape. Of nine other seaweeds collected the specimens were so fragmentary that they cannot be given specific rank until more and better material becomes available. —*C. S. Gager.*

1197. G., A. [Rev. of: Church, A. H. **Thalassiophyta and the subaerial transmigration.** Botanical Memoirs, No. 3. Oxford University Press. *95 p.* 1919.] Jour. Botany **58**: 59–61. 1920.

1198. Gard, Mederic. **Division chez Euglena limosa Gard. [The cell-division of Euglena limosa Gard.]** Compt. Rend. Acad. Sci. Paris **170**: 291–292. 1920.—See Bot. Absts. 6, Entry 989.

1199. Mangin, L. **Sur les Chaetoceras du group Peruvianus Bgtw. [On the species of Chaetoceras of the group Peruvianus Bgtw.]** Bull. Mus. Hist. Nat. Paris **25**: 305–310, 411–414. 1919.—The author compares critically the various species of long-horned Diatoms of this group previously published and recognizes 5 species and 1 form which he groups in two series designated as *convexicornes* and *concavicornes*. A new name and a new combination are proposed as follows: *C. convexicornis* (*C. peruvianus* Gran.) and *C. concavicornis* Mangin forma *currens* (*C. currens* Clève). The several species are illustrated by line drawings.—*E. B. Payson.*

1200. Penard. **Mallomonas insignis spec. nova?** Bull. Soc. Bot. Genève **11**: 122–128. *1 fig.* 1919.—Many specimens of *Mallomonas* were obtained at all seasons of the year in swamps. The plants are considered either a new species or a European form of the American species *M. pulcherrima.*—*W. H. Emig.*

1201. Playfair, G. I. **New ane rare freshwater algae.** Proc. Linnean Soc. New South Wales **43**: 497–543. *Pl. 54–58, 11 fig.* 1918. —These notes cover new and rare Australian forms, 66 of which are described and figured.—*Eloise Gerry.*

1202. Taylor, Fred B. **Diatoms. New genera and species.** Trans. Amer. Microsc. Soc. **38**: 283–290. 1919.—The catalogues of diatoms and the books and monographs which have recently appeared on the subject are briefly discussed. The suggestions of Cleve and others for new genera are given. A list of 42 new genera with descriptions and citations is given.—*S. H. Essary.*

1203. Teodoresco, Em. C. **Sur la presence d'une phycoérythrine dans le Nostoc commune.** [On the presence of a phycoerythrin in Nostoc commune.] Rev. Gèn. Bot. 32: 145–160. *Pl. 2, fig. 4.* 1920.—See Bot. Absts. 6, Entry 844.

1204. Yendo, Kichisaburo. **Novae Algae Japoniae. Decas I–III.** [New Japanese Algae. Decades I–III.] Bot. Mag. Tokyo 34: 1–12. 1920.—The following new species, varieties and forms of marine algae are described: *Cladophoropsis coriacea, Chaetomorpha Chelonum* Collins var. *Japonica, Myriocladia Kuromo, Haliseris evanescens, Spathoglossum pacificum, Laminaria amakusaensis, Myriactis Sargassi, Wildemania Tasa, Chondrus nipponicus, Chondrus giganteus, Gymnogongrus catenatus, Phyllophora japonica, Endocladia Yasudae, Trematocarpus pygmaeus, Lomentaria hakodatensis, Chylocladia lubrica, Symphyocladia latissima, Polysiphonia hakodatensis, Pterosiphonia pumila, Dasyphila plumarioides, Euzoniella ocellata, Wrightiella loochooensis, Heterosiphonia japonica, Heterosiphonia coccinia* Fkbg. forms *pacifica* and *nipponica, Ceramium Kondoi, Grateloupia catenata, G. jubata, G. kaifuensis, G. ? nipponica, Nemastoma Nakamurae* and var. *membranacea, Hildenbrandtia yessoensis.* —*Roxana Stinchfield Ferris.*

MORPHOLOGY AND TAXONOMY OF BRYOPHYTES

Alexander W. Evans, *Editor*

1205. Andrews, A. LeRoy. [Rev. of: Herzog, T. **Die Bryophyten meiner zweiten Reise durch Bolivia.** (Bryophytes of second Bolivian trip.) Bibliotheca Botanica 87. 1916.] Bryologist 23: 9–10. 1920.—The reviewer questions the author's tendency toward the multiplication of new species and notes the slight value of the connection claimed to exist between Bolivian and Mexican floras. The general phytogeographical discussions of the volume are commended.—*Edward B. Chamberlain.*

1206. Bryan, Geo. S. **Early stages in the development of the sporophyte of Sphagnum subsecundum.** Amer. Jour. Bot. 7: 296–303. *26 fig.* 1920.—Author reports the results of his study of the young sporophyte dissected out from the venter of the archegonium. The fertilized egg divides by a horizontal wall into two approximately equal cells, and a filament of from 6 to 7 cells is usually formed before any longitudinal divisions occur. The division wall in the 2-celled stage could not be traced with certainty in the older stages. Apical growth probably occurs in the development of the young sporophyte. If the walls appear in regular order, a long, slender type of sporophyte is produced; if in irregular order, a shorter, bulbous type. The number of primary segments (formed by walls transverse to the axis of the archegonium) has not been found to exceed 12. In a considerable number of cases disintegration begins at the apical portion of the very young sporophyte and proceeds for some distance basipetally. The early development of the sporophyte of *Sphagnum* shows a greater similarity to that of the Jungermanniales than to any other group of the Bryophyta.—*E. W. Sinnott.*

1207. Familler, Ignaz. **Die Lebermoose Bayerns. Zweiter (beschreibender) Teil.** [The Hepaticae of Bavaria. Second (descriptive) part.] Denkschr. Bayerischen Bot. Ges. Regensburg 14: 1–167. *27 pl., 11 fig.* 1920.—The first part of this comprehensive work on the Hepaticae of Bavaria was published in 1917 (Denkschr. Bayer. Bot. Ges. Regensburg 13: 153–304. *5 fig.*) and consisted of a compilation of the known stations for the various species. The second part describes the species in considerable detail from independent observations, giving a general idea of their habitats and of their distribution in Bavaria. Keys to the genera and species are interpolated throughout, and every species is illustrated by one or more photomicrographs, supplemented in a few cases by line drawings to bring out significant features. In all 57 genera and 164 species are recognized, 22 species belonging to the Marchantiales, 139 to the Jungermanniales, and 3 to the Anthocerotales. These relatively low numbers are due to the author's broad conceptions of specific limitations. Instead of dividing a series of closely related plants into species of subordinate rank, he defines the entire series as a

single comprehensive species, under which he frequently distinguishes subspecies, varieties and forms. In many cases these subspecies, varieties and even forms are recognized as distinct species by other writers, the following subspecies for example belonging to this category: *Pellia epiphylla* subsp. *Neesiana*; *Lophozia ventricosa* subspp. *guttulata* (Lindb. & Arn.), *longidens* (Lindb.), *confertifolia* (Schiffn.), and *longiflora* (Nees); *L. alpestris* subsp. *Wenzelii* (Nees); *Scapania curta* subsp. *helvetica* (Gottsche); *S. dentata* subsp. *undulata* (L.); *S. aequiloba* subsp. *aspera* (Bernet); and *Anthoceros punctatus* subsp. *Husnoti* (Steph.). All of these subspecies, an occasional variety, and the majority of the forms recognized by the author represent new combinations (in the nomenclatorial sense), although this is not indicated in any way. The work is designed primarily for beginners but will be of value to all students of the Hepaticae.—*A. W. Evans.*

1208. Monckton, Horace W. **The flora of the Bagshot District.** Jour. Botany **57**: 251–257. 1919.—See Bot. Absts. 4, Entry 1747.

1209. Pottier, Jacques. **Sur la généralité de l'asymétrie foliaire chez les mousses. The occurrence of foliar asymmetry in the mosses.**] Compt. Rend. Acad. Sci. Paris **170**: 471–474. *7 fig.* 1920.—A study of sections of leaves of *Leucobryum vulgare* shows that the dorsal side of the leaf develops more rapidly than the ventral, the leaves thus becoming unsymmetrical.—*C. H. and W. K. Farr.*

1210. Rickett, H. W. **The development of the thallus of Sphaerocarpos Donnellii Aust.** Amer. Jour. Bot. **7**: 182–194. *4 pl., 1 fig.* 1920.—The author discusses briefly the somewhat conflicting views of previous students of this genus. In the species studied by him, he finds that the spore germinates by a slender germ tube, the details as to the formation of which are very variable. On the end of this tube and at right angles to it a germinal disc is formed by the activity of all the terminal cells of the tube, rather than by a single apical cell. This disc develops into the thallus of the mature plant. Apical growth of the thallus is due to a group of four-sided cells at the apical notch, although the author suggests the possibility that but one apical cell may sometimes be present. The dorsal and ventral segments of these apical cells add to the thickness of the thallus in the median portion. The lateral segments produce the marginal lobes. Under natural conditions, these lobes are merged into a more or less continuous rim. Under cultural conditions, the more rapid elongation of the median portion of the thallus results instead in the production of distinct leaf-like lobes. Branching of the thallus is due to a division of the apical group of cells into two such groups, a lobe occupying the region between. The formation of lobes is not necessarily related to branching. A detailed account of the history of two typical plants is presented.—*E. W. Sinnott.*

1211. Warnstorf, C. **Bemerkungen über einige Formen von Polytrichum und ihre Rippenlamellen auf der Oberfläche der Blatter. [Observations on several forms of Polytrichum and their leaf surface lamellae.**] Hedwigia **61**: 409–411. 1920.—Several forms of *Polytrichum attenuatum* Menz. are noted, and a difference is demonstrated between the surface lamellae of *P. decipiens* Limpr. and *P. ohioense* Ren. & Card. The author suggests a division of the genus *Polytrichum* into four groups based on lamella characters. The following species and varieties are described as new: *P. attenuatum* var. *longifolium* and *P. decipiens* var. *strictifolium* from Germany; *P. vaginatum* from Greenland.—*R. S. Nanz.*

1212. Warnstorf, C. **Über die vegetative Vermehrung einiger Laubmoose aus Bolivia. [The vegetative reproduction of several mosses from Bolivia.**] Hedwigia **61**: 412–417. 1920.—The author describes a method of vegetative reproduction by means of leaf fragmentation in *Prionodon luteovirens* (Tayl.) Mitt., *Tortula aculeata* Wils., *Bartramia fragilifolia* C. Mull., and *Leiomela deciduifolia* Herzog. The last-named species also propagates itself by fragmentation of stems and branches.—*R. S. Nanz.*

MORPHOLOGY AND TAXONOMY OF FUNGI, LICHENS, BACTERIA, AND MYXOMYCETES

H. M. Fitzpatrick, *Editor*

FUNGI

1213. Adams, J. F. **Rusts on conifers in Pennsylvania.** Pennsylvania Agric. Exp. Sta. Bull. 160. *30 p., 10 fig.* 1920.—A brief characterization of the coniferous rusts, an enumeration of the species known to occur in the State, citations of collections with collectors names, and an index to species and hosts. The list is composed of *Peridermium Comptoniae, P. pyriforme, P. cerebrum, P. strobi,* on stems of *Pinus* spp.; *P. acicolum, P. delicatulum, P. carneum, P. Helianthi, P. Ipomoea,* on leaves of *Pinus* spp.; *P. Peckii, P. Hydrangeae,* on leaves of *Tsuga; P. columnare* on leaves of *Abies; Caeoma Abietis-canadensis* on twigs and cones of *Tsuga; Gymnosporangium Juniperi-virginianae, G. globosum, G. germinale, G. effusum, G. Nidus-avis, G. clavariaeforme, G. botryapites, G. trachysorum,* on *Juniperus* spp., and six other rusts which have been collected only in the uredinial or telial stages.—*C. R. Orton.*

1214. Adams, J. F. **Sexual fusions and development of the sexual organs in the Peridermiums.** Pennsylvania Agric. Exp. Sta. Bull. 160: 31–76. *5 pl.* 1920.—"Sexual cell fusions and development of the aecium were studied in five species of Peridermium, *P. Comptoniae, P. pyriforme, P. acicolum, P. Peckii* and *P. balsameum.* In the two stem forms studied (*P. Comptoniae* and *P. pyriforme*) the pycnia have a caeomoid type of fructification, being apparently unlimited in their development. These caeomoid pycnia originate between the cork layer and cortical parenchyma and thus are to be considered cortical in origin and not sub-epidermal. They are irregular in outline and the margins are not delimited, but consist of a spreading plectenchyma. The pycnial layer appears as a broad, flat crust-like layer with no definite aperture for the escape of the pycniospores which apparently depend for their escape upon the irregular cracking of the overlying tissue. They were observed developing in the tissue overlying the young aecia as well as in the adjacent tissue. The pycnia in the leaf forms are early delimited. They are conoidal to hemispherical in outline and possess a definite aperture for the escape of the pycniospores. The gametophoric hyphae form a conspicuous palisade layer in the aecial primordia of *P. Comptoniae, P. pyriforme,* and *P. acicolum.* The pseudoparenchyma of the aecial primordia is made up of the peripheral portions (sterile cells) of the gametophoric hyphae and is sharply defined from the fertile layer. The sterile cells of the gametophoric hyphae are homologous to the so-called "buffer cells" of the caeoma. Sexual cell fusions occur between adjacent fertile cells of similar size and position in two gametophoric hyphae. A dissolution of the walls occurs usually at the upper ends or where they come in contact. This phenomenon proceeds so as to result ultimately in the complete disappearance of the contact walls, thus forming a fusion cell. The development of a peridium appears to be associated in these forms with an extensive development of pseudoparenchyma. The central arch of the peridium is composed of the apical metamorphosed aeciospores of the inner spore chains. An exception is found in the aecium of *P. acicolum* where the division of the peridial initial cells in the central arch cuts off an intercalary cell above. The lateral portion of the peridium consists entirely of metamorphosed spores. In *P. Comptoniae* the central arch of the peridium is two to four cells in thickness. The size of the aecium in *P. acicolum, P. Peckii* and *P. balsameum* is early determined by the breadth of the primordium. The aecia of *P. Comptoniae* and *P. pyriforme* resemble the caeoma in their indeterminate growth and the aecidium cup in their deep origin and the presence of a peridium. In *P. Comptoniae* and *P. pyriforme* the effect of the development of the pycnia and aecia is such as to kill the immediately adjacent tissue. This tissue is sloughed off in the late summer with the formation of a new cork layer."—*C. R. Orton.*

1215. Bezssonoff, [—.] **Sur l'obtention experimentale de la sexualite chez les champignons et orientee sur la structure typique du plasma sexuel. [On the initiation of sexual repro-**

duction in fungi by experimental means, and the existence of a cytoplasmic structure peculiar to the sexual process.] Compt. Rend. Acad. Sci. Paris 170: 288–290. 1920.—See Bot. Absts. 6, Entry 1344.

1216. Fairman, Charles E. **The ascomycetous fungi of human excreta.** *11 p., 3 fig.*, 1 *pl.* Lyndonville, New York, 1920.—A privately published pamphlet prepared for the information of the medical profession. The occurrence of a species of Fusarium is noted, and a species of Cylindrocolla is described as new under the name *C. faecalis*. Brief mention is made of the more commonly known fungous parasites of man, and a synopsis is given of those Ascomycetes which have been found in human tissues or excreta. A bibliography is appended. —*H. M. Fitzpatrick.*

1217. Fitzpatrick, Harry Morton. **Monograph of the Coryneliaceae.** Mycologia 12: 206–237. *Pl. 12–18.* 1920.—Author believes it best to consider the Coryneliaceae under the Perisporiales and close to the Perisporiaceae rather than under the Sphaeriales. Interrelationships of species are discussed and a chart is presented showing author's conception of the evolution within the family. The family is described and a key to the genera is included. These are *Caliciopsis, Sorica, Corynelia,* and *Tripospora. Coryneliella* is excluded. Each genus is described, its relationships are discussed, and a key is given to the species. Three species are recognized and fully described in the genus *Caliciopsis* and two new combinations are made: *C. calicioides* (Fries) and *C. subcorticalis* (Cooke and Ellis). In the genera *Sorica* and *Tripospora* one species is recognized and described in each genus. The genus *Corynelia* is to be described in the next number, but species of this genus as well as all the species in the other general are here clearly illustrated by means of photographs and drawings.—*H. R. Rosen.*

1218. Fragoso, D. Romualdo Gonzalez. **Datos para la Deuteromicetologia Catalana.** [Data on the fungi imperfecti of Catalonia.] Mem. R. Acad. Cien. y Artes [Barcelona] III, 15: 429–467. *Illustrated.* 1920.—A large number of species of the fungi imperfecti were collected in the province of Catalonia in northeastern Spain. Twenty-four species and several varieties are described as new.—*L. L. Harter.*

1219. Hedgcock, George G., N. Rex Hunt, and Glenn G. Hahn. **New species and relationships in the genus Coleosporium.** Mycologia 12: 182–198. 1920.—A *Peridermium* on needles of *Pinus caribaea, P. palustris* and *P. taeda* was found in close association with plants of *Amsonia ciliata* bearing uredinia of *Coleosporium apocynaceum.* Inoculations with aeciospores were successful, uredinia and telia being produced on *Amsonia.* A new combination is made and described: *Peridermium apocynaceum* (Cooke) Hedgc. & Hunt. Infection experiments, using aeciospores indicates that *Peridermium fragile* Hedgc. & Hunt is the aecial stage of *Coleosporium laciniariae* Arthur. This species ranges from New Jersey to Florida and Arkansas. As a result of successful inoculations with aeciospores of *Peridermium minutum* Hedgc. & Hunt on *Adelia ligustrina,* with the production of uredinia and telia, the alternate host for this *Peridermium* is established and the new combination *Coleosporium minutum* Hedgc. & Hunt is made and described. Numerous infection experiments as well as morphological differences indicate that *Coleosporium elephantopodus* (Schw.) Thum. and *C. carneum* (Bosc) Jackson are different species. The new combination *Peridermium elephantopodis* (Schw.) Hedgc. & Hahn is made and described "to distinguish it from other species of the form genus *Peridermium.*" Eleven species of *Pinus* are listed as aecial hosts and four species of *Elephantopus* as uredial and telial hosts of *Coleosporium elephantopodis. Peridermium carneum* (Bosc) Seym. & Earle is redescribed; fourteen species of *Pinus* and fourteen species of *Vernonia* together with localities are listed under *Coleosporium carneum.* A new leaf *Peridermium, P. floridanum,* Hedgc. & Hahn, is described on *Pinus palustris* collected near Ocala, Florida. *Peridermium intermedium* Am. Auct. appears to be a mixture of two species, *P. carneum* and *P. elephantopodis.* Seven species of *Peridermium* are listed as occurring on *Pinus echinata.* Notes are presented on the period of fruiting of leaf Peridermiums on pine. Eleven new pine hosts of various species of *Coleosporium* are listed, and thirteen new

uredinial and telial hosts of various genera including *C. ribicola* on *Grossularia cynosbati* from Wisconsin, and on *G. innominata* and *G. reclinata* from District of Columbia.—*H. R. Rosen.*

1220. Lingelsheim, A. **Über "steinreizker" in Schlesien.** [**"Steinreizker" in Silesia.**] Hedwigia **61**: 380–382. 1920.—*Verticillium silesiacum* n. sp. is described as the conidial stage of *Hypomyces lateritius*. The specimen was found on the market in Frankenstein as a parasite of *Lactaria theiogola*. The name is suggested by the hardness of the hypertrophied tissue as compared with tissue affected with *Hypomyces ochraceus* (*V. agaricinum*). Mycelium of *V. silesiacum* is yellow and the conidia measure 18 × 7μ.—*Verticillium niveostratosum* Lindau on *Fuligo septica* and *Stemonitis fusca* probably is identical with the conidial stage of *Hypomyces violaceus.*—*D. Reddick.*

1221. Loubière, A. **Sur la flore fongique du fromage de Brie.** [**The fungal flora of de Brie cheese.**] Compt. Rend. Acad. Sci. Paris **170**: 336–339. *2 fig.* 1920.—In addition to species of *Penicillium* the fungi present in the order of their frequency are *Fusarium sarochroum* Desm., *Geotrichum candidum* Link, *Trichosporium* sp., *Botryotrichum piluliferum* Sacc. & March, *Hormodendron cladosporioides* (Fresen.) Sacc., *Gymnoascus luteus* Zuk., *Lasiobotrys* sp. Reproduction of *Trichosporium* by chlamydospores and conidia is described, as is also the formation of conidiophores and arthrospores in *Hormodendron.*—*C. H. and W. K. Farr.*

1222. Riddle, Lincoln W. **Observations on the genus Acrospermum.** Mycologia **12**: 175–181. *Pl. 11.* 1920.—Since the fruiting body appears to be a perithecium the author follows Ellis in placing the genus under the Hypocreales rather than under the Hysteriales. Variations of *Acrospermum compressum* are noted; *A. graminum* Libert and *A. foliicolum* Berk. are considered as varieties of it, the latter as var. *foliicolum* (Berk.) Riddle comb. nov. *Acrospermum Maxoni* Farlow is described as a new species occurring on the underside of living fronds of *Polypodium induens* and *P. cretatum*. *Acrospermum corrugatum* Ellis and *A. fultum* Harnkess are said to be the same species and "is identical with the long known but comparatively rare European species: *Lophium dolabriforme* Wallr."—*H. R. Rosen.*

1223. Saccardo, P. A. **Notae mycologicae, ser. XXIX—Micromycetes Dakotenses et Utahensis a Doct. J. F. Brenckle lecti et communicati.** [**Fungi of Dakota and Utah collected by J. F. Brenckle.**] Mycologia **12**: 199–205. 1920.—Twenty-five perfect and eight imperfect fungi are listed, some with brief descriptive notes. One new genus and several new species are described: *Rosellinia subsimilis* Sacc. sp. nov., *Phaeotrype* Sacc. gen. nov., *P. Brencklei* Sacc. sp. nov., *Diatrype paurospora* Sacc. sp. nov., *Chorostate utahensis* Sacc. sp. nov., *Diaporthe* (Euporthe) *Brenckleana* Sacc. sp. nov., *Lachnum crystalligerum* Sacc. sp. nov., *Patinella Brenckleana* Sacc. sp. nov., *Septoria Lunelliana* Sacc. sp. nov., *Melanconium botryosum* Sacc. sp. nov., *Steganosporium utahense* Sacc. sp. nov.—*H. R. Rosen.*

1224. Sartory, A. **Sur un champignon nouveau du genre Aspergillus isolé dans un cas d'onychomycose.** [**A new fungus of the genus Aspergillus isolated from a case of onychomycosis.**] Compt. Rend. Acad. Sci. Paris **170**: 523, 534. 1920.—*C. H. and W. K. Farr.*

1225. van Overeem, C. **Beiträge zur Kenntnis einiger Helotiaceen.** [**Contribution to a knowledge of the Helotiaceae.**] Hedwigia **61**: 383–389. *Pl. 4, 2 fig.* 1920.—Critical discussions with extended descriptions from an abundance of material of the following: *Gorgoniceps aridula, Helotium sulphurinum, H. pallescens. Rutstroemia firma* has 3 types of asexual spores Verticillium-like, Oidium-like and conidia formed at the ends of the ascospores. *Ciboria rhizophila* is new to the Dutch flora.—*Helotium virgultorum* is exceedingly variable in form, depending on conditions of growth, and the two varieties of Rehm, *salicinum* and *fructigenum* are wholly unwarranted.—*D. Reddick.*

1226. van Overeem, C. **Über zwei wenig bekannte Schmarotzer von Discomyceten.** [**Two little-known parasites of discomycetes.**] Hedwigia **61**: 375–379. *1 fig.* 1920.—*Stephanoma strigosum* Wallr. and *Sepedonium simplex* Cda. were found on *Lachnea hemisphaerica*

in Holland. The Verticillium stage of *S. strigosum* appears first as a covering on the hymenium of the host. This is replaced by a layer of chlamydospores which has practically the same color as the normal hymenium. The spores of the host remain an unrecognizable mass. The disease was very abundant in Holland in 1918.—*Sepedonium simplex* attacks the entire apothecium but produces its spores on the surface of the hymenium. The spores are borne somewhat like those of *Verticillium*. This stage has been called *Fusisporium fungicolum* by Corda. Chlamydospores follow and these are colored, first red then yellowish brown. A new diagnosis, following suggestions of Lindau, of *Sepedonium simplex* (Corda) Lindau, is presented. —The parasite was found on *Macropodium macropus* and on *Lachnea hemisphaerica* and has been reported on other discomycetes.—*D. Reddick.*

1227. Vuillemin, P. **Revue de mycologie. Première partie: Mycologie pure.** [Review of mycological literature. Part I: Pure mycology.] Rev. Gén. Sci. Pures et Appliquées, 31: 148–156. 1920.—In this review the author summarizes the work of many authors, *first* on the cytology of the Basidiomycetes, in which observations on cell and nuclear fusions are reported and from which inferences as to changes in classification are drawn: *second* on the relation of nuclear evolution and behavior to sexuality: *third* on the anatomy of the Basidiomycetes at various stages in growth and development: *fourth* similarly on the anatomy of the Ascomycetes with the effect of these studies on classification in each group: *fifth* on the reports of new species in all parts of the world.—*G. J. Peirce.*

1228. Vuillemin, P. **Revue de mycologie. Deuxieme partie: Mycologie appliquée.** [Review of mycological literature. Part II: Applied mycology.] Rev. Gén. Sci. Pures et Appliquées 31: 177–186. 1920.—Reviews in the field of applied mycology, the more recent publications on fungi under the headings (1) poisoning by fungi, (2) fungous parasites of man, (3) fungous parasites of invertebrate animals, (4) fungous parasites of plants. Of these last he considers A—Phycomycetes, B—Uredineae and Ustilagineae, C—Basidiomycetes, D—Ascomycetes and Fungi imperfecti. One is impressed with the very considerable number of American papers included.—*G. J. Peirce.*

1229. Vuillemin, Paul. **Remarques sur un champignon rapporté par M. Loubiere au genre Trichosporium.** [Remarks on the fungus reported by Loubiere as belonging to the genus Trichosporium.] Compt. Rend. Acad. Sci. Paris 170: 554, 555. 1920.—The author questions the justification for placing the fungus described by Loubiere as occurring in deBrie cheese in the genus *Trichosporium*. It resembles in many ways species of *Harziella* but is excluded from that group on account of the absence of mucilage.—*C. H. and W. K. Farr.*

LICHENS

1230. Anders, Josef. **Die Strauch- und Blattflechten Nordböhmens. 2 Nachtrag.** [The fruticose and foliose lichens of northern Bohemia. 2.] Hedwigia 61: 351–374. 1920.—Geologic formations are described in some detail. Information from Katzer's *Geology of Bohemia*. Lichen flora is very rich. Particularly interesting conditions are found in some of the railroad cuts. List includes *Cladonia*, 37 species, *Stereocaulon nanum*, *Peltigera crumpens*, *Parmelia*, 7 species, *Parmeliopsis*, 2 species, *Cetraria*, 7 species, *Letharia vulpina*, *Gyrophora vellea* and *flocculosa*, *Physcia dubia*. *Cetratia bohemica* is new; several new forms are described. Many of the species are new to Bohemia. Synonomy, stations, and exsiccati are mentioned and there are critical notes on many species.—*D. Reddick.*

1231. Mereschkovsky, Const. **Contribution à la flore lichénologique des environs de Kazan.** [The lichen flora of Kazan.] Hedwigia 61: 183–224. *Pl. 2, 1 fig.* 1919.—A provisional list in which certain genera, e. g., *Cladonia*, have not received full attention. The flora of Kazan is either terrestrial or forest. Species of *Physcia* abound. Notes on occurrence, distribution, exsiccati, etc. Practically all species noted are described in some detail and there are critical notes on some species. There are proposed several new combinations, a number of new varieties and many new forms.—*D. Reddick.*

BACTERIA

1232. Bergstrand, Hilding. **On the nature of bacteria.** Jour. Infect. Diseases **27**: 1–22. *8 pl., 13 fig* 1920.—The writer brings data and photographic evidence to prove that "bacteria may be regarded as Fungi imperfecti developed through reduction of higher forms and not as lowly primordial organisms to be placed at the very beginning of the organic world." He confirms the theory of Zopf that the fission fungi, probably with some exceptions, are able to pass through different developmental stages.—*Selman A. Waksman*

PALEOBOTANY AND EVOLUTIONARY HISTORY

E. W. Berry, *Editor*

1233. Aruffo, Caterina Samsonoff. **Sopra due alghe calcaree di specie viventi, nel Post-pliocene inferiore di Livorno.** [Two existing species of calcareous algae in the older Pleistocene of Leghorn.] Atti R. Accad. Lincei Rend. (Cl. Sci. Fis. Mat. e Nat.) 28^1: 359–362. 1919.—The two species of algae *Lithophyllum papillosum* (Zan.) Foslie *f. Cystosirae* (Hauck) Foslie and *Lithothamnium polymorphum* (L) Aresch. *f. tubercolata* (Foslie) are reported from the study of fossils in the collection of the R. Institute of Geology of Florence.—*F. M. Blodgett.*

1234. Bertrand, Paul. **Succession normale des flores houillères dans le bassin houiller du Gard.** [Normal succession of the coal flora in the coal basin of Gard.] Compt. Rend. Acad. Sci. Paris **170**: 331–333. 1920.—The flora of these beds is discussed in its bearing on the stratigraphy of the region.—*C. H. and W. K. Farr.*

1235. Braun-Blanquet, J. **Über die eiszeitliche Vegetation des südlichen Europa.** [Upon the glacial vegetation of southern Europe.] Viertelsjahrsschrift Naturf. Ges. Zurich. 64 Jg. **1919**: xli–xliv. 1920.

1236. Braun-Blanquet, J. **Die Föhrenregion der Zentralpentäler, insbesondere Graubündens, in ihrer Bedeutung für die Florengeschichte.** [The Fir region of the Central Alpine valleys, especially the Grisons, and its bearing on the floral history.] Viertelsjahrsschrift Naturf. Ges. Zurich. **1918**: 59–86. 1920.

1237. Brochman-Jerosch, H. **Weitere Geschichtspunkte zur Beurteilung der Dryasflora** [Additional viewpoints in the interpretation of the Dryas flora.] Heim Festschrift Vierteljahrsscher Naturf. Ges. Zürich. **1919**: 35–49. 1920.

1238. Fleiszner, [—]. **Die Bildung fossiler Kohlen im Zusammenhange mit Verwitterungsvorgängen.** [The formation of fossil coal in relation to processes of weathering.] Berg. u. Hütten. Jahrb. **67**: 1–13. 1919.

1239. Florin, Rudolf. **Zur Kenntnis der Jungtertiären Pflanzenwelt Japans.** [On knowledge of the later Tertiary plant world of Japan.] Kgl. Svenska Vet.-Akad. Handl. **61**: 1–71. *6 pl.* 1920.—Fossil plants are described from Amakusa Island, Shimonoseki and Mogi and an unknown locality, all in southern Japan. The two principal localities are those of Amakusa and Mogi, the latter first made known by Nathorst some forty years ago, but the age of which had never been conclusively settled beyond the fact that it was post-Miocene. The Amakusa flora comprises representatives of the genera Taxodium, Juglans, Carpinus, Fagus, Celtis, Magnolia, Liquidambar, Sorbus, Prunus, Dictamnus, Rhus, Ilex, Acer, Aesculus, Elaeocarpus, Tilia, Stuartia, Cornus, Clethra, Diospyros, Apocynum, Viburnum, Symplocos?, Sophora?, Spiraea?. The Mogi flora contains the genera Taxodium, Salix, Fagus, Ulmus, Schizandra, Liquidambar, Phellodendron, Acer, Zizyphus, Elaeocarpus, Tilia, Stuartia?, Cornus and Viburnum. Both are contained in a tuff and have a majority of species in common. That from Amakusa has 35 per cent extinct forms and 48 per cent of its still existing species are represented in the present flora of southern Japan. That from Mogi has

39 per cent of extinct forms and of the remainder 45 per cent still exist in southern Japan. Three of the extra Japanese forms are confined to the existing flora of southeastern North America. There is an interesting discussion of the floral facies and its ecological indications as well as a review of the wide ranging Pliocene floras as shown by their presence throughout the Northern Hemipshere. The two floras described are considered to be of about the same age, that from Amakusa being, if anything, slightly younger than that from Mogi. Both are taken to indicate slightly cooler climatic conditions than prevail at the present time in southern Japan, and their age is considered to be late Pliocene.—*E. W. Berry.*

1240. Fürrer, E. **Wandlungen in der Vegetationsdecke der Schweiz.** [**Changes in the vegetation of Switzerland.**] Viertelsjahrsschrift Naturf. Ges. Zurich. 64 Jg. **1919**: iii–v. 1920.

1241. Grout, F. F., and Broderick, T. M. **Organic structures in the Biwabik iron-bearing formation of the Huronian in Minnesota.** Amer. Jour. Sci. **48**: 199–205. 1919.—Describes organic remains from the pre-Cambrian rocks of Minnesota, including a new species of Alga, *Collenia biwabikensis.*—*E. W. Berry.*

1242. Hesselman, H. **Om pollenregn på hafvet och fjärrtransport af barrträdspolier.** [**The rain of pollen on the sea and the wide distribution of the pollen of trees.**] Geol. Fören. Förh. **41**: 89–108. *4 fig.* 1919.

1243. Iwasaki, C. **A fundamental study of Japanese coal.** Tech. Repts. Tohoku Imp. Univ. Sendai **1**: 1–35. *8 pl.* 1920.

1244. Jongmans, W. J. **Stratigraphie van het Nederlandsch Productief Carboon.** [**Stratigraphy of the coal measures of Holland.**] *250 p. Charts 14–27.* Amsterdam, 1918.—This final report of the commission for the investigation of the coal measures of Holland is devoted to a detailed account of the stratigraphy as disclosed by underground exploration. There are some lists of fossil plants, but the work will be chiefly useful to botanists for the location of the numerous fossil plants described by the author in other publications. Its geological value is great.—*E. W. Berry.*

1245. Kräusel, R. **Nachträge zur Tertiärflora Schlesiens. I.** [**Addendum to the Tertiary flora of Silesia.**] Jahrb. Preuss. Geol. Landes. für 1918, **39**: 329–417. *Pl. 16–27.* 1920.—Records Macrosporium and Helicomia on Sequoia, a fern (Woodwardites), Torreya, Taxus, Pinus, Taxodium, Sequoia, Libocedrus, Salix, Myrica, Pterodarya, Juglans, Carya, Carpinus, Betula, Alnus, Castanopsis, Ulmus, Brasenia, Magnolia, Crataegus, Rubus, Potentilla, Acer, Vitis, Trapa, Cornus, Nyssa, Hypericum, Hippuris, Carpolithus, and Symplocos from the brown coal of Silesia.—*E. W. Berry.*

1246. Kräusel, R. **Ein Beitrag zur Kenntnis der Diluvialflora von Ingramsdorf in Schlesien.** [**A contribution to the knowledge of the Pleistocene flora of Ingramsdorf in Silesia.**] Neues Jahrb. 1920, **1**: 104–110. *Pl. 3.* 1920.—Figures a spot fungus with teleutospores on fragments of Phragmites, fern sporangia suggestive of *Polypodium vulgare*, and *Salvinia natans* from a peat and loam deposit at Ingramsdorf in Silesia. *E. W. Berry.*

1247. Kräusel, R., and others. **Die Pflanzen des schlesischen Tertiärs.** [**The plants of the Tertiary of Silesia.**] Jahrb. Preuss. Geol. Landes. für 1917, 38[2]. *338 p., 26 pl.* 1919.—Silesia is a classic region for Tertiary plants, published work going back to the days of Volkmann's *Silesia subterranea* (1720) and several of Göppert's early works, commencing in 1845, were devoted to their elucidation. The present work is a more or less critical revision of what is known of these floras. The leaves and fruits of the Betulaceae and Ulmaceae are discussed by Reimann, a beginner in paleobotany, who was killed in the war; those of the conifers and Fagaceae are discussed by E. Reichenbach; the Salicaceae, Aceraceae and remaining families by F. Meyer; and the woods of the browncoal by W. Prill and R. Kräusel. This last part is the most important for although the part dealing with the leaves and fruit is an exceed-

ingly useful summary to date, the authors bring no very critical experience to their task. They have proposed scarcely any new species, and have greatly reduced the number of recorded species from these Miocene deposits by combining a great many of Gœppert's ill-advised specific proposals. Thus the following which stood as species in the literature, mostly names of Gœppert disappear into the synonymy: 10 of Salix, 6 of Populus, 1 of Juglans, 1 of Myrica, 6 of Quercus, 1 of Castanea, 4 of Platanus, 4 of Acer, 1 of Rhus, 3 of Dombeyopsis, 1 of Trapa, 2 of Alnus, 7 of Betula, 3 of Carpinus and 7 of Ulmus. The woods described from the Silesia browncoal number 18 species and are referred to the following genera: Podocarpoxylon, Cedroxylon, Piceoxylon, Pinuxylon, Glyptodroloxylon, Taxodioxylon, Cupressinoxylon, and Juniperoxylon. A key to the wood structure of the recent and fossil Cupressinoxyla should prove useful to anatomists, especially those interested in fossil woods.—*E. W. Berry.*

1248. Kryshtofovich, A. **A new fossil palm and some other plants of the Tertiary flora of Japan.** Jour. Geol. Soc. Tokyo **27**: 1–20. *Pl. 13–15.* 1920.—Describes fossil plants from Shiogama and Tsukinoki in the province of Rikuzen and from Akihomura near Sendai. Species of Sabal, Juglans, Fagus, Castanea, Ficus, Liquidambar and Vitiphyllum are recorded from the former and Taxodium, Betula and Alnus from the latter.—There is a helpful discussion of the age of these and other Tertiary plant beds of Japan and the author concludes that the aforementioned florules along with those previously known from Azano, Kayakusa, Ogoya, Akiho, Shiogama, etc., are of Miocene age: those of Shiobara and Mogi are Pliocene: and those of Ishikari and Shitakara are Eocene.—*E. W. Berry.*

1249. Kubart, B. **Über den Verfall paläobotanischer Forschung in den Ländern deutscher Zunge.** [**Upon the decline of paleobotanical researches in German speaking countries.**] Österr. Bot. Zeitg. **1919**: 233–237.

1250. Neuweiler, E. **Die Pflanzenreste aus den Pfahlbauten am Alpenquai in Zurich und von Wollishofen sowie einer interglazialen Torfprobe von Niederweningen (Zürich).** [**The plant remains of the Lake dwellings at the Alpine quay in Zurich, from Wollishofen and from an interglacial peat boring at Niederweningen.**] Viertelsjahrsschrift. Naturf. Ges. Zurich. 64 Jg. **1919**: 617–648. 1920.

1251. Reid, Mrs. Eleanor M. **On two preglacial floras from Castle Eden (County Durham).** [Abstract.] Ann. and Mag. Nat. Hist. **6**: 247–248. 1920.—Fossil seeds were examined from clays found in fissures of the Magnesian Limestone at Castle Eden. The clays had been carried by the Scandinavian ice from the area now occupied by the North Sea. The study proved the presence of two seed-bearing clays of different ages. A comparison of the Cromerian, Teglian, Castle-Eden, Reuverian, and Pont-de-Gail floras on the bases of the percentages of all exotics, and of Chinese-North American exotics (i. e., plants now inhabiting the Far East of Asia or North America but not Western Europe), in each flora proved the Reuverian to be Lower Pliocene and the Castle-Eden flora to be Middle Pliocene. Therefore a study of fossil seeds made possible the discrimination of strata intimately mixed and the determination of their geological ages. The Castle-Eden Pliocene is characterized by the number of extinct and exotic forms and by the absence of aquatic species. Therefore the area now forming part of the North Sea probably was an upland valley four hundred feet above the Middle Pliocene sea-level. [From author's abstract of a paper read at a meeting of the Geological Society.] —*H. H. Clum.*

1252. Reid, Mrs. Eleanor M. **A comparative review of Pliocene floras based on the study of fossil seeds.** [Abstract.] Ann. and Mag. Nat. Hist. **6**: 248. 1920.—By plotting as a curve the percentages of the exotics and of the Chinese-North American exotics from the Cromerian, Teglian, Castle-Eden, Reuverian, and Pont-de-Gail floras, it was found that all lay along a smooth curve, indicating changes in the Pliocene and Miocene Ages. The position of the floras in time, as indicated by the curve, agrees with that determined by paleontology. The destruction and supplanting of the Chinese-North American exotic flora began about the Middle Miocene when the Europea and Asiatic Alpine ranges attained their maxi-

mum uplift. The curve indicates an incoming flora, the present flora of Western Europe which first appeared in the Miocene. Only part of it has survived, the destruction becoming greater after the Middle Pliocene. [From author's abstract of a paper read at a meeting of the Geological Society.]—*H. H. Clum.*

1253. Schlaffner, H. **Die geographischen Bedingungen der Moorbildung in Deutschland.** [The geographical conditions of moor formation in Germany.] Neue Münchener geogr. Studien. 1. *47 p.* 1920.

1254. Stutzer, O. **Über Methoden der mikroskopischer Kohlenuntersuchung.** [Upon methods of microscopic coal investigation.] Mikrokosmos. Zeits. angewandte Mikroskopie. 1919–1920. Hft. 6: 132–134.

1255. Werth, A. J. **Die wichtigsten Moor- und Torf-arten und ihre Entstehung in Vergangenheit und Gegenwart.** [The important moor and peat species and their origin in the past and the present.] Mitt. Ver. Förd. Moorkultur. 38: 46–51, 59–64. 1920.

PATHOLOGY

G. H. Coons, *Editor*
C. W. Bennett, *Assistant Editor*

1256. Adams, J. F. **Rusts on conifers in Pennsylvania.** Pennsylvania Agric. Exp. Sta. Bull. 160. *30 p., 10 fig.* (1919) 1920.—See Bot. Absts. 6, Entry 1213.

1257. Anonymous. **Insects and diseases which injure trees.** Amer. Forestry 26: 308–309. 1920.—Contains formulae and general directions.—*Chas. H. Otis.*

1258. Anonymous. **The menace of silver leaf.** Jour. Bd. Agric. [London] 25: 870–871. 1918.—Silver leaf is reported as becoming increasingly serious to orchard trees. Valuable varieties of plum, like Victoria, are threatened with extinction. "By promptly cutting out silvered branches and by rigorously removing all dead tree, or trees which have begun to die back, it has been proved in practice that the spread of the disease is checked."—*D. Reddick.*

1259. Atwood, Alice C. **Errors in Lindau's "Thesaurus" and Saccardo's "Sylloge."** Mycologia 12: 169–171. 1920.

1260. Bailey, M. A. **Puccinia malvacearum and the mycoplasm theory.** Ann. Botany 34: 173–200. April, 1920.—See Bot. Absts. 6, Entry 774.

1261. Calvino, Mario. **El zacate prodigio.** (Tripsacum latifolium, Hitchcock.) [A forage plant.] Revist. Agric. Com. y Trab. 3: 62–67. *6 fig.* 1920.

1262. Campbell, C. **Su di un caso di invasione di ruggine nera dei cereali "Puccinia graminis Pers." in Terra di Lavoro.** [An invasion of the black rust of cereals in Terra di Lavoro.] Atti R. Accad. Lincei Rend. (Cl. Sci. Fis. Mat. e Nat.) 28^1: 142–145. 1919.—In 1913 in a restricted area in Atina, wheat was found so severely attacked by rust as to practically a total failure. A leaf rust classed as *Puccinia rubigovera* (*P. triticina*) is commonly present in this region but causes little damage and does not attack the barberries. The severe attack in question was found to have three centers lying about or on the windward side on barberry plantings. All the barberries were removed in 1913 except one plant; in 1914 the rust appeared only in the vicinity of this plant. With the destruction of the remaining barberry in 1914, the rust has not reappeared from 1915 to the present date. The introduction of *P. graminis* was attributed to experimental plantings of wheat in this neighborhood.—*F. M. Blodgett.*

1263. Carpenter, C. W. **Potato diseases in Hawaii and their control.** Hawaii Agric. Exp. Sta. Bull. 45. *42 p. 15 pl., 7 fig.* 1920.—A brief description of the more important potato diseases, including insect enemies, together with a discussion of the control measures

found to be most practicable. The following diseases are discussed: early blight, late blight, Fusarium wilt, Sclerotium wilt, late blight rot, storage rots, corky scab, black scurf or russet scab, tuber moth, borers, cut worms, and mites.—*J. M. Westgate.*

1264. Chaine, J. **L'attaque des vegetaux par les Termites. [Termite attacks on plants.]** Rev. Gén. Sci. Pures et Appliquées **31**: 250–255, 281–285. 1920.—*Termes lucifugus*, a white ant of tropical origin, late in the eighteenth century invaded Rochelle, Rochefort and other places in western France, gradually spreading from there over a wide area and causing considerable damage, not only to buildings, furniture, and other structures of dead wood, but to living trees, shrubs and even herbaceous plants. A proposed method of control is outlined which consists in irrigation of the affected trees by one or another of three solutions, trenches holding 200 to 300 liters being used for this purpose. The essential ingredients of these solutions are mercuric bichloride, potassium ferrocyanide and potassium ferricyanide respectively, and these are used at approximately 3 per cent concentration. Irrigation with these solutions was repeated two or three times at intervals of two days, and then the trenches were refilled with soil. There were three such irrigations per annum, in the winter, spring and fall. Comparison at the end of the first year showed that the treated trees looked slightly better than the rest. At the end of the second year, however, the trees treated with the mercuric bichloride and the potassium ferrocyanide solutions no longer gave any external evidence of termites, while those treated with the ferricyanide merely showed great improvement. Extension of this method to the protection of potatoes, oats, cabbage, etc., seemed to be entirely successful up to 1914, and to have no ill effects upon the animals fed upon the materials thus protected.—*G. J. Peirce.*

1265 Conner, S. D., and E. N. Fergus. **Borax in fertilizers.** Purdue Univ. Agric. Exp. Sta. 239. *15 p., fig. 1–4.* 1920.—See Bot. Absts. 6, Entry 1381.

1266. Duddleston, B. H. **The modified rag doll and germinator box.** Purdue Univ. Agric. Exp. Sta. Bull. 236. *12 p., 7 fig.* 1920.—See Bot. Absts. 6, Entry 477.

1267. Groom, Percy. **Brown oak.** Quart. Jour. Forest. **14**: 103–109. 1920.—When certain individual British oak trees, not differing in form in any recognizable way from the normal, are felled, it is discovered that their heart-wood is wholly or partially represented by a much more valuable type of wood known as "brown oak" or "red oak." This wood is firm in texture and deeper or richer in color than the normal wood. Sometimes uniformly colored, at other times it is traversed by bands or studded with patches of lighter and darker wood, which may in places be nearly black. This latter variegated type is the so-called "tortoise-shell" variety. The United Kingdom is the sole known geographical source of this product. In the trunk, the brown wood most frequently occurs at the base, extends upwards and downwards into the root for a variable distance, often tapering in such a manner that its ends apparently conicide with the inmost heart-wood. In the trunk, the brown wood, when traced upward, sometimes becomes confined to one side; and when the trunk divides into two or more leaders, the brown wood may ascend one but be lacking from the others. It may occur in upper parts of the tree but be partially or entirely lacking in any lower part of the trunk. In the trunk, the brown wood often stops at a large knot, and in such cases, the large limb connected with the knot is devoid of brown oak. Of two oak trees growing side by side, one may be normal and the other have the brown wood. The brown wood is often encountered in the form of burr-wood (burl). This brown wood is firm and hard.—Under the miscroscope, mature "brown oak" structurally agrees with ordinary oak hardwood. It differs from this only by the presence of considerable quantities of solid brown substance in the cavities (especially in the parenchyma) and the firmness with which it holds tannin. Careful microscopic investigations and cultural experiments lead to the conclusion that the coloring of the wood is due to a fungus whose identity is as yet unknown. The hyphae possess little power of attacking the walls, but feed nearly exclusively on substances in cells and especially of the parenchyma. At the expense of its food material, the fungus manufactures coloring materials that darken the wood.—*C. R. Tillotson.*

1268. Hamblin, C. O. **Collar rot of citrus trees.** Agric. Gaz. New South Wales 31: 439–441. *6 fig.* 1920.—Description and treatment given for this disease which is caused by *Fusarium limonis* Briosi.—*L. R. Waldron.*

1269. Hartley, Carl. **Stem lesions caused by excessive heat.** Jour. Agric. Res. 14: 595–604. 1918.—"Whitespot" occurs on very young seedlings of conifers and certain other plants and resembles closely typical "damping off." "The location of whitespot lesions on the stems, their observed relation to insolation and to dry surface soil, and the production of typical lesions by artificial heating, indicate excessive heat as the cause of most whitespot trouble." Records show that surface soils may reach a temperature well over 50°C.—Lesions on stems of similar plants ranging up to 4 years in age may be attributed to heat but further experimental evidence is needed.—*D. Reddick.*

1270. Harvey, R. B. **Relation of catalase, oxidase, and H-concentration to the formation of overgrowths.** Amer. Jour. Bot. 7: 211–221. *2 fig.* 1920.—See Bot. Absts. 6, Entry 1353.

1271. Hoffer, G. N. **Disease-free sweet corn seed.** Purdue Univ. Agric. Exp. Sta. Bull. 233. *12 p., 8 fig.* 1920.—This bulletin considers the experiments wherein sweet corn seed was tested for infection by root- and stalk-rot pathogenes and then planted. Other experiments dealt with ears selected by inspection as apparently sound. The symptoms of root and stalk rots are briefly described and the effects of the rots on production are noted. Experiments during 1919 at various places show a 10 to 30 per cent increase in yield from the apparently disease-free seed ears over those which germinate well but are infected. The methods of control recommended are (1) careful field selection and curing of the seed ears and (2) testing the ears for seed infections on germinators.—*G. N. Hoffer.*

1272. Hungerford, Charles W. **Rust in seed wheat and its relation to seedling infection.** Jour. Agric. Res. 19: 257–277. *Pl. 38–48, 1 fig.* 1920.—Uredinia and telia of *Puccinia graminis tritici* are found embedded in the pericarp on the hilar end of kernels of wheat (*Triticum*) and sometimes along the ventral groove as far up as the middle of the kernel. Infected kernels have black hilar ends and groups of telia appear as shining black specks under the lens. The percentage of seed infection in the rust years, 1915 and 1916, was very low. A little over 1 per cent was the largest quantity found in any sample. Durum wheats are most commonly affected.—The infection undoubtedly spreads to the kernel from original infection on rachis, rachilla or glumes.—Germinating power of seed is not impaired by rust infection. Rust infection in the field does not appear earlier on plants from infected seed than on plants from clean seed. 2,500 plants from infected seed grown under controlled conditions developed no rust. Mycelium was not found to spread from pericarp to young plants. Viable urediniospores sown with seed failed to produce infection.—Stem rust is not transmitted from one wheat crop to the next by means of infected seed. "In the writer's judgment, the occurrence of stem rust sori in the pericarp of the caryopses of grains and grasses has no especial significance; but the infection spreads to these tissues just as it does from an infection point in any of the vegetative parts of the plant."—*D. Reddick.*

1273. Hutchins, D. E. **Insignis-pine disease.** Jour. Agric. New Zealand 16: 37. 1918. —An attack at Khandallah on insignis pine began in early winter and increased through the wet season. It was worst in the warm wet spring. The leaves turned brown and dropped. When dry weather set in new leaves pushed forth. This disease is distinct from the South Australian disease caused by *Peridermium.* Climatic condition are thought to be responsible.—*D. Reddick.*

1274. Jackson, A. B. **A possible cause of spike in sandal.** Indian Forester 45: 635. 1919. —A suggestion is made that spike might be caused by excessive parasitism of sandal on sandal.—*E. N. Munns.*

1275. Jackson, H. S. **New or noteworthy North American Ustilaginales.** Mycologia 12: 149–156. 1920.—See Bot. Absts. 6, Entry 775.

1276. Lingelsheim, A. Über "steinreizker" in Schlesien. ["Steinreizker" in Silesia.] Hedwigia 61: 380–382. 1920.—See Bot. Absts. 6, Entry 1220.

1277. Lopriore, G. Recent biological researches on the rusts affecting cereals. Internat. Rev. Sci. & Practice Agric. 10: 742–746. 1919.

1278. Magrou, J. Immunité des plantes annuelles vis-à-vis des champignons symbiotiques. [Immunity of annual plants with respect to symbiotic fungi.] Compt. Rend. Acad. Sci. Paris 170: 616–618. 1920.—Seeds of *Orobus coccineus* (*Lathyrus sphaericus*) were sown in soil infested with the mycorrhiza of *Orobus tuberosus*. The roots were invaded by the fungus, and after 40 days appeared the same in microscopic section as do the roots of *Orobus tuberosus*. After 70 days, however, the roots had completely destroyed the fungus by "phagocytosis." The immunity of *Orobus* resembles that of *Mercurialis* in that "phagocytosis" occurs some time after invasion by the fungus, rather than at the time of infection as is the case in *Solanum*.—*C. H. and W. K. Farr.*

1279. Murrill, W. A. Oudemann's work on fungi. Mycologia 12: 169. 1920.—See Bot. Absts. 6, Entry 169.

1280. Neger, F. W. Die Krankheiten unserer Waldbäume und wichtigsten Gartengehölze. Kurzgefasstes Lehrbuch für Forstleute u. Studirende der Forstwissenschaft. [Diseases of forest trees and important orchard trees.] *viii + 286 p., 234 fig.* Ferdinand Enke: Stuttgart, 1919.—"A compact text for foresters and students of forestry."

1281. [Pennell, Francis W.] Index to American mycological literature. Mycologia 12: 172–174. 1920.

1282. Quaintance, A. L., and E. H. Siegler. Insecticides, spraying and fruit insect control. Better Fruit 14[8]: 3–6, 40. Feb., 1920.—A popular summary of fruit-insect control methods. A spray-dilution table and a spray-combination diagram are given.—*A. E. Marneek.*

1283. Reinking, Otto A. Diseases of economic plants in southern China. Philippine Agric. 8: 109–134. *3 pl.* 1919.—This paper presents the results of a collecting trip made during May and June in the agricultural regions of southern China. Special attention was given to citrus diseases. The host plants are listed alphabetically according to the common names used in the Philippines; Latin names are also given, and in many cases the common Chinese names. Under each host is presented a list of the diseases which attack it, together with names of causal organisms, brief descriptions of symptoms, estimates of losses, and suggestions regarding control measures. Emphasis is placed upon the necessity of disease surveys in connection with plant quarantine.—*S. F. Trelease.*

1284. Rumbold, Caroline. Giving medicine to trees. Amer. Forestry 26: 359–362. *5 fig.* 1920.—An account of injection experiments, the purpose of which was to control or eliminate the fungus causing chestnut blight. The experiments were performed in Pennsylvania, the trees being for the most part Paragon scions grafted on native chestnut stock. Fifty-six organic and inorganic substances in solution were injected. Dilute solutions of lithium carbonate and lithium hydroxide injected in the spring and early summer months checked the progress of the fungus, but the results were not permanent. The work, which has been in progress several years, should be regarded as only preliminary.—*Chas. H. Otis.*

1285. Schaffnit, G. Untersuchungen über die Brennfleckenkrankheit der Bohnen [Investigations concerning the anthracnose of beans.] Mitteil. Deutsch. Landw. Ges. 25: 299. 1920.—The author discusses the work under way at the Bonn-Poppelsdorf Experiment Station. The perithecial form, *Glomerella lindemuthiana*, has not yet been found in Germany. Conidia from pods of the crop of 1919, which were preserved in a cold but sheltered place were still capable of germination on February 12, 1920. The author discusses the influence of air cur-

rents and plant foods on the disease. The question of susceptibility of varieties is treated at some length. Forty-five varieties of bush beans were tested. It was found that in one locality a variety might be relatively immune, while elsewhere it might be quite susceptible. —*A. J. Pieters.*

1286. Schultz, E. S., and Donald Folsom. **Transmission of the mosaic disease of Irish potatoes.** Jour. Agric. Res. **19**: 315–337. *Pl. 49–56.* 1920.—Tubers from mosaic hills may be expected to transmit the disease. Tubers from apparently healthy plants growing near diseased plants also transmit the disease, at least in part. The tendency to do this is greater when there are only 2 or 3 tubers on the plant, when the relative size of the tuber in the parent hill is greater, and when the seed piece is near the "bud" end.—Transmission of the disease was effected by grafting, by transfer of juice, and by means of aphids, the experiments being carried out under various conditions, including field conditions, with test plants under screened cages. Intervarietal transfer of expressed juice from diseased plants to healthy gave infection. "Transmission was attempted, but without success so far as could be ascertained, in the same season, by means of flea beetles, Colorado potato beetle, the 'seed'-cutting knife, and contact of seed pieces, of roots, and of vine." Infection probably does not result from growing plants in soil on which diseased plants were produced the previous year. "It appears impossible either for affected plants to recover or, so long as diseased stock is not far off and insect carriers exist, to assure the maintenance of health of susceptible varieties by rogueing plots or by selecting hills, tubers or seed pieces." Control of insect carriers seems to be the important means of checking spread of potato mosaic.—*D. Reddick.*

1287. Subramaniam, L. S. **A Pythium disease of ginger, tobacco and papaya.** Mem. Dept. Agric. India (Bot. Ser.) **10**: 181–194. *Pl. 1–6.* 1919.—See Bot. Absts. 6, Entry 784.

1288. Suematsu, N. **On the artificial culture of Helminthosporium Oryzae.** Bot. Mag. Tokyo **33**: 291–297. *3 fig.* 1919.—See Bot. Absts. 6, Entry 785.

1289. Tubeuf, C. von. **Überblick über die Arten der Gattung Arceuthobium (Razoumowskia) mit besonderer Berücksüchtigung ihrer Biologie und praktischen Bedeutung. [Review of the species of the genus Arceuthobium (Razoumowskia) with especial reference to their biology and practical importance.]** Naturw. Zeitschr. Forst- u. Landw. **17**: 167–271. *Fig. 1–50.* 1919.—The author calls attention to the number and size of witches'-brooms caused by mistletoe occurring on most of North American species of conifers. It may be said that the formation of witches'-brooms is the most extensive and apparent manifestation of disease exhibited by North American Abieteae. Witches'-brooms on Cupresseae and Taxodium are not caused by Arceuthobium. Witches'-broom formations resulting from Arceuthobium may take place on all host plants. The root formation resembles that of *Viscum alba,* the European mistletoe, but that of Arceuthobium is more extensive than either *Loranthus europeous* or *Viscum alba.* The type of growth depends on the species of Arceuthobium and the host. The smaller species of Arceuthobium usually attack thin barked tree species; they develop in dense clusters and form thick brooms where young shoots and buds are present. The larger species occur chiefly on thick barked tree species; and although they do not exhibit the regular progress of the root system of the smaller varieties, they can develop a large system, and cause enormous thickening (hypertrophy) of infected branches. Infection by mistletoe most commonly takes place on 2–3 year old shoots; rarely on shoots older than 5 years. It may be supposed that the bark roots of Arceuthobium penetrate the first year growth the first fall. A more complete study of physiological characters and extent is desired of the American species. The various forms of Arceuthobium witches'-brooms are summarized.—The 13 well-known species in America and in the Old World, and the characters of the three less well known species in Mexico are tabulated, and each species is separately described with especial reference to host plants.—The biology of fruiting, seed distribution, germination, root and sucker formation, and of the sprout are discussed at length; reference being made to investigations of Heinricher, Peirce, MacDougal, and others. Pollination of European mistletoes is effected by flies and by wind, the pollen grains being caught in a drop of nectar or oil (Hein-

richer) exuded by the pistil of the female flower. One embryo is usually produced, but investigations have shown germination occasionally from two or more. The seed is "shot-out" of the ripe fruit; the propulsive force being obtained by tensions developed in the fruit membrane The seed is provided with mucilaginous threads, which balance the seed in flight, enable it to adhere to its host, and also act as moisture absorbents. Arceuthobium differs from other Loranthaceous parasites in its greater moisture requirement for germination. Although a point under dispute, the author contends that shedding of old sprouts is a regular process. The plant protects itself against excessive transpiration by the formation of an enduring row of epidermal cells, which may become several rows thick. The fibro-vascular bundles are either isolated or in groups separated by woody tissue. The irregularities in the anatomy of Arceuthobium sprouts are evidently occasioned by the large percentage of non-woody, divisible parenchyma, especially in the pith and medullary rays, and in the parenchyma between the bundles in the wood. This parenchyma increases in different degrees. The death of young shoots of infected trees is sometimes caused by this parasite; and whole trees may be killed. It causes injury not only by taking water and food from the plant, but by the chemical decomposition of cells, and by the mechanical rupturing of cell membranes.—*J. Roeser.*

1290. van Overeem, C. **Über zwei wenig bekannte Schmarotzer von Discomyceten. [Two little-known parasites of discomycetes.]** Hedwigia **61**: 375–379. *1 fig.* 1920.

1291. Waldron, J. W., A. Gartley, C. R. Hemenway, J. N. S. Williams, G. P. Wilcox, T. H. Petrie, and H. P. Agee. **Report of the committee in charge of the Experiment Station.** Rept. Exp. Sta. Hawaiian Sugar Planters Assoc. **1919**: 1–49. 1920.—See Bot. Absts. 6, Entry 901.

1292. Washburne, J. N. **White pine "flu."** Amer. Forestry **26**: 343–345. *3 fig.* 1920. —Concerns the white pine blister rust and the pinon pine rust. Popular.—*Chas. H. Otis.*

1293. Wells, B. W. **Early stages in the development of certain Pachypsylla galls on Celtis.** Amer. Jour. Bot. **7**: 275–285. *1 pl.* 1920.

1294. Wöber, A. **Versuche zur Bekämpfung des roten Brenners und des falschen Mehltaues der Reben im Jahre 1919. [Experiments in the control of red blight and downy mildew of the vine in the year 1919.]** Zeitschr. Landw. Versuchsw. Deutschösterreich **23**: 1–6. 1920. —For the prevention of red blight (*Pseudopeziza tracheiphila*), painting the vines with 40 per cent iron sulphate solution during the winter followed by four applications of 1.5 per cent Bordeaux mixture during the growing season, gave the best results. Good results also were obtained by the use of commercial colloidal preparations of copper. Omission of the winter treatment lessened the control somewhat.—For the prevention of downy mildew (*Plasmopara viticola*), four spray applications were made, beginning just before the looming period. Good results were obtained by the use of Bordeaux mixture, various commercial colloidal preparations of copper, a mixture containing copper sulphate, zinc sulphate and lime, and a colloidal silver preparation.—*John W. Roberts.*

1295. Wormald, H. **The "brown rot" diseases of fruit trees, with special references to two biologic forms of Monilia cinerea Bon. II.** Ann. Botany **34**: 143–172. April, 1920.— Continuing his work of comparing the organisms bringing about the different types of "Brown Rot" on fruits in England, the author in this contribution determined that the strain of *Monilia cinerea* infecting flowering shoots and cankers of apple trees (forma *mali*) differs from the organism isolated from plum (forma *pruni*) in its greater capacity to secrete an enzyme which oxidizes tannin. The oxidizing enzyme produced freely by *M. cinerea* forma *mali* was demonstrated by use of gum guaiac emulsion as well as by pyrogallic acid. The enzyme did not show any action upon tyrosin or hydroquinone but did produce a brownish-yellow color in solutions of tannic, gallic and pyrogallic acids. It was produced by "forma *mali*" in liquid culture media, infected fruits and spurs of apple and its presence is correlated by the writer with

the greater virulence toward apple shown by this form over that shown by the form isolated from Prunus.—On the basis of color, and size of pustules, dimensions of conidia, mode of conidial germination, viability of conidia (confirming Ewert's work) growth on culture media, and mode of parasitism the distinctions between *M. fructigena* and *M. cinerea* are summarized. Within the species *M. cinerea* at least two forms are recognizable culturally and parasitically distinct. "The American form of Monilia is more nearly related to *M. cinerea* than to *M. fructigena* but in cultures can be distinguished from the European form of *M. cinerea* by its mode of growth in cultures and by its numerous fructifications."—*G. H. Coons.*

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

Heber W. Youngken, *Editor*
E. N. Gathercoal, *Assistant Editor*

1296. Ballard, C. W. **Official standards for botanical drugs.** Jour. Amer. Pharm. Assoc. **9**: 676–678. 1920.—In the revision of the U. S. P. IX, the author suggests some changes in the standards for botanical drugs, including definite botanical origins, with the elimination of such phrases as "and other species," etc. Suggestions are also offered regarding the phraseology for descriptions of plant tissues; descriptions of foreign materials; indication of diagnostical characters; indication of possible adulterants; standard fineness for powders used in descriptions; methods of technic used in mould examination. Author also urges the adoption of a standard for moisture in crude drugs.—*Anton Hogstad, Jr.*

1297. Beringer, G. M. **A note on the examination of a commercial sample of oil of pennyroyal.** Amer. Jour. Pharm. **92**: 460–462. 1920.—An examination of a commercial sample of oil of pennyroyal, showed it to contain 50 per cent of alcohol. Authors describe the various tests applied, which includes color, odor, S. G., B. P., iodoform test for pulegone and the reduction with nascent hydrogen to form menthol.—*Anton Hogstad, Jr.*

1298. Checkley, George. **The formation of a student's botanical garden.** Pharm. Jour. **104**: 44. 1920.—A botanical garden embracing all of the 46 drug plants listed in the Minor Syllabus (Pharmacy Examination) would require about 60 square yards of good loamy soil with plenty of sunshine. Preparation of the ground commences in the winter, the seed beds are prepared in the spring and plant specimens from the woods and meadows transplanted during the summer and fall. If desired, the plants may be arranged in the garden by the natural classification beginning with *Ranunculaceae*, or preferably, placed in those positions most suitable for their growth, each plant or plot being properly labeled. Plants best grown from seed (obtainable from a good seedsman) are *Avena sativa, Brassica alba, Brassica sinapoides, Conium maculatum, Cytisus scoparius, Datura stramonium, Digitalis purpurea, Foeniculum capillaceum, Hordeum distichon, Hyoscyamus niger, Matricaria chamomilla, Papaver rhoeas, Papaver somniferum, Ruta graveolens.* From the fields, woods and hedge rows may be collected *Althaea officinalis, Atropa belladonna. Bryonia dioica, Colchicum autumnale. Daphne laureola, Drypoteris filix-mas, Juniperus communis, Menyanthes trifoliata, Œnanthe crocata, Pinus sylvestris, Quercus robur, Rosa canina, Salix alba, Sambucus nigra, Solanum dulcamara, Taraxacum officinale, Triticum vulgare, Ulmus campestris, Valeriana officinalis.* Where trees are mentioned, one or two-year old specimens are understood. Specimens of the remaining plants will needs be obtained through a florist, herb nursery or an exchange bureau. These are *Aconitum napellus, Anthemis nobilis, Cochlearia armoracia, Colchicum autumnale, Daphne mezereum, Juniperus sabina, Lavendula vera, Mentha piperita, M. pulegium, M. viridis, Prunus laurocerasus, Rosmarinus officinalis* and *Taxus baccata.* Suggestions for establishing a drug plant exchange are offered.—*E. N. Gathercoal.*

1299. Grant, E. H. **New tests for the identification of sparteine and guaiac.** Jour. Amer. Pharm. Assoc. **9**: 704. 1920.—For sparteine: Extract alkaloid with chloroform from slightly ammoniacal solution. From chloroform solution extract with dilute sulphuric acid; solution

again made slightly alkaline and reextract with chloroform. Evaporate and add small amount of bromine water. A yellow precipitate, or, in the presence of large amounts of sparteine, an orange-colored oil forms, which dissolves on warming. Evaporate solution to dryness on water bath, and while still hot invert over concentrated ammonia water. Beautiful pink color develops if sparteine is present. Will detect 0.0005 gram of alkaloid, providing interfering substances are absent.—For guaiac: Extract with chloroform and separate into two portions. Evaporate one portion to dryness and treat residue with concentrated sulphuric acid. Intense red color indicates guaiac. Shake second portion with an equal volume of bromine water. Sometimes in the presence of guaiac, a sudden flash of purple or blue shoots through the chloroform just as the bromine dissolves in it. Separate chloroform layer and evaporate to dryness. Treat residue with concentrated sulphuric acid. Brilliant green indicates guaiac.—*Anton Hogstad, Jr.*

1300. Heyl, Frederick W., and Harris H. Hopkins. **The ragweed pollen proteins.** Jour. Amer. Chem. Soc. **42**: 1738–1743. 1920.

1301. Heyl, Frederick W., and Charles Barkenbus. **Some constituents of Viburnum prunifolium.** Jour. Amer. Chem. Soc. **42**: 1744–1755. 1920.

1302. Rhodes, Leland B. **Cockle-bur oil: a new seed oil.** Jour. Amer. Chem. Soc. **42**: 1502–1507. 1920.

1303. Rusby, H. H. **Codes of botanical nomenclature in the United States Pharmacopoeia.** Jour. Amer. Pharm. Assoc. 9: 670–671. 1920.—A discussion of the so-called American and the so-called International Codes of botanical nomenclature, in which the author states that the latter one is misnamed, because it is not a code in the proper sense of the word, but that the former or the so-called American code is a code as it is based on a governing principle, namely, that priority of publication determines the name for a group or species. The name, however, is misleading as it emanated with a group of especially eminent botanists equally representative of Great Britain, Germany and France. Author states that the U. S. P. should not depart from the so-called American code.—*Anton Hogstad, Jr.*

1304. Tsakalotos, A. E. **Sind die mydriatischen Alkaloide der Belladonnawurzel bei Gegenwart von Alkohol mit Wasserdämpfen fluchtig? [Are the mydriatic alkaloids of Belladonna root volatile by the addition of alcohol in the presence of steam?]** Schweiz. Apotheker-Zeit. 57: 291–292. 1919.—A series of experiments and investigations proving that the alkaloids of belladonna root are not volatile when distilled with steam in the presence of alcohol. —*B. H. Hoffstein.*

1305. Viehoever, Arno. **Popular names of crude drugs.** Jour. Amer. Pharm. Assoc. 9: 671–676. 1920.—Author advocates greater care in the use of common names for crude drugs, and in so doing has shown why greater care should be exercised. Paper includes a discussion of the derivation of a number of drug terms, namely those which are derived from the scientific name; those which represent marked changes of the scientific name; those which have no connection with the scientific name but which may be identical with the native name; those which have been derived from physical characters, either of the drug itself or of conspicuous parts of the drug plant and those which have no definite meaning to the general trade.—A series of rules and a discussion of new terms follows. Author suggests that such plants as Spanish Digitalis (*Digitalis thapsi*) might well be called Digithapsis and that again such a plant as Mexican Scammony (*Ipomoea orizabensis*) might well be called Orizaba root or Orizap, to avoid confusion. He concludes by emphasizing the need of an agreement upon names which are not only simple and acceptable to the trade, but are more generally based upon scientific classification.—*Anton Hogstad, Jr.*

PHYSIOLOGY

B. M. Duggar, *Editor*
Carroll W. Dodge, *Assistant Editor*

GENERAL

1306. Brierley, W. B. **Some concepts in mycology—an attempt at synthesis.** Trans. British Mycolog. Soc. 6: 204–235. 1919.—The author advocates for fungi, both parasitic and saprophytic, the physiological species concept, rather than merely a morphological description—the latter assuming that form is primarily constant and hereditary. The author points out that organisms apparently similar morphologically may possess properties wholly distinct and individual when investigated quantitatively with respect to behavior and metabolic activity. He also deplores the idea so frequently advanced to the effect that physiological or biochemical attributes are inconstant. [See Bot. Absts. 4, Entry 1061; also anonymous abstract in Nature 104: 708. 1920.]—*B. M. Duggar.*

PROTOPLASM, MOTILITY

1307. Galippe, V. **Recherches sur l'évolution du protoplasma de certaines cellules végétales par le procédé de la culture.** [A study of the transformations of the protoplasm of certain plant cells by the culture method.] Compt. Rend. Acad. Sci. Paris 170: 342–345. 1920.—Fragments of the epidermis of petals of various flowers were aseptically removed and placed from one to seventy-two hours in distilled sterile water saturated with ether or oxygenated. The tissue was then sectioned and stained. It was found that the protoplasm contracts and fragments. In these fragments are to be found small bodies, called "microzymas," which the author considers are the living parts of the protoplasm. These bodies give rise to ovoid and rod-shaped bacilli which persist in the cells for some time.—*C. H. and W. K. Farr.*

1308. Lillie, Ralph S. **The nature of protoplasmic and nervous transmission.** Jour. Phys. Chem. 24: 165–191. 1920.—Nervous transmission is only a special case of protoplasmic transmission. The surface layer of protoplasm is exceedingly responsive to outer conditions and local stimulation evokes prompt response by the entire surface. This is particularly true in cited cases of blood corpuscles and fertilized eggs. These and many other, if not most other, reactions do not depend upon transfer of materials for the propagation of stimuli. It seems to the author unlikely that so general a phenomenon should be confined to living matter, which leads to the question of the general type of physico-chemical process to which protoplasmic transmission belongs. The essential generalizations established regarding nervous transmission are summarized as: (1) the excitation state may be initiated by a variety of means, (2) once aroused, the excitation state is transmitted continuously with no decrease in intensity from one region of tissue to an adjoining region, (3) local response ceases when stimulation ceases, (4) the rate of transmission is very different in different tissues and organisms, (5) velocity in any case is dependent on temperature (the 10° temperature coefficient being between 2 and 3), (6) transmission may be influenced reversibly by chemical substances, (7) transmission is not accompanied by change in form, by evident change in temperature, or by optical change, but is always accompanied by a change in electrical potential which travels (forming an action current) at the same rate as the activation wave. These generalizations, the general close correlation between local rate of development of action-currents in different tissues, and the rate of propagation of the excitation wave, the promptness with which rapidly conducting tissues respond and vice versa (indicating the adjustment of the tissue to electric currents having peculiarities of its own action-currents) and recent evidence pointing to the great influence exerted by the conductivity of the medium surrounding the nerve leads the author to conclude that "transmission is essentially a case of secondary electrical stimulation," stimulation "always being initiated at a certain linear distance in advance of the already stimulated active area." The next question of how electric currents stimulate protoplasm involves a consideration of the chemical changes at the surface. Any

injurious modification of the surface layer alters electrical potential. The author traces the similarity with the "local-action" theory of corrosion (the chemical effect being due to local electrical currents formed between adjoining areas of the metalic surface differing in composition or physical state) and considers in detail the characteristics of the propagation of such oxidation on wires and the resemblances between this and protoplasmic transmission. This similarity is not complete because of the structure of the protoplasm, the surface in living matter being the surface of the protoplasmic films and lamellae and not solely that of the cell.—*H. E. Pulling.*

DIFFUSION, PERMEABILITY

1309. Collip, J. B. **Maintenance of osmotic pressure within the nucleus.** Jour. Biol. Chem. 42: 227–235. 1920.—It is suggested that the concentration of amino-acid and other nitrogenous solutes of small molecular weight in the nucleus is sufficient to maintain its osmotic tension.—*G. B. Rigg.*

1310. Curtis, Otis F. **The upward translocation of food in woody plants. II. Is there normally an upward transfer of storage foods from the roots or trunk to the growing shoots?** Amer. Jour. Bot. 7: 286–295. 1920.—The common belief that food stored in the roots and lower trunks of trees is carried upward in the spring and used in shoot formation is shown to rest on evidence which is not conclusive. The author discusses and criticizes this evidence. In his own work with ringed branches, he finds that when a ring is made on that part of a stem which is from 5–15 or more years old or from 1–4 or more centimeters in diameter, the growth above the ring approximates that of a normal stem. Evidently upward movement of foods from points below the ring is not essential. In cases where growth has been somewhat lessened by ringing, this may be due to deficiency of water owing to the prevention of the formation of a new layer of xylem. When little stored food is available considerable shoot growth may still take place owing to the production of food by the leaves of the young shoot itself. Data are not sufficient to indicate how far back from the tip the food is withdrawn for use in shoot growth. The author believes that normally there is no upward movement of foods from the roots and perhaps little or none from the main trunk. He suggests that food stored in roots is used solely in root growth.—*E. W. Sinnott.*

1311. Loeb, Jacques. **On the cause of the influence of ions on the rate of diffusion of water through collodion membranes. I. and II.** Jour. Gen. Physiol. 2: 387–408, 563–576. 1920.—The similarity between the effects of electrolytes on free osmosis and electrical endosmose is demonstrated, and, since the effects of electrolytes on electrical endosmose seem best to be ascribed to their influence on the density of electrical charge on the membrane, it is concluded that the effect of electrolytes on free osmosis through a collodion membrane can be explained on the same basis. On the basis of the Helmholtz theory of electrical double layers, it seems that the ion having the same sign of charge as the membrane increases the diffusion of water towards the solution side of the membrane, while that ion having a charge opposite to that of the membrane decreases the charge on the latter and decreases the diffusion of water. The effects on the ions vary at different concentrations.—*O. F. Curtis.*

1312. Pantanelli, E. **Alterazioni del ricambio e della permeabilita cellulare a temperature prossime al congelamento. [Changes in cell permeability at temperatures very near freezing.]** Atti R. Accad. Lincei Rend. (Cl. Sci. Fis. Mat. e Nat.) 28[1]: 205–209. 1919.—It was found that the cells of the endocarp of the mandarin orange (*Citrus nobilis*) when subjected to temperatures very near to freezing suffer a progressive increase in the cell permeability. This is made evident by a rapid emission of water from the tissue when it is kept dry, or by an exosmosis of substances from tissue immersed in water. This is favored by such substances as penetrate rapidly into the cells (glycerin, ethyl alcohol, citric acid, and free alkali); there is also a rapid destruction of sugar, limited by the supply of substances that may be absorbed and utilized for respiration (glycerin, ethyl alcohol, citric acid) or by such substances as curb the exosmosis of the sugars or by the intermediate products of respiration (sodium

chloride, potassium phosphate, citric acid). The sugars present in the exterior liquid (saccharose, glucose) did not act in this way because they were not absorbed. At such temperatures there is a lively autodigestion of protein, which is favored by the exosmosis of the soluble products of the digestion and by the more rapid destruction of the sugars.—*F. M. Blodgett.*

MINERAL NUTRIENTS

1313. Anonymous. [Rev. of: (1) Burd, J. S. **Rate of absorption of soil constituents at successive stages of plant growth.** Jour. Agric. Res. **18**: 51–72. 1919. (2) Hoagland, D. R. **Relation of the concentration and reaction of the nutrient medium to the growth and absorption of the plant.** *Ibid.* 73–117. 1919.] Nature **104**: 446. 1920.

1314. Maquenne, L., and E. Demoussy. **Sur l'absorption du calcium par les racines des plantes et ses propriétés antitoxiques vis-à-vis du cuivre. [The absorption of calcium by plant roots and its antitoxic properties with respect to copper.]** Compt. Rend. Acad. Sci. Paris **170**: 420–425. 1920.—The antagonism of calcium and copper is studied with a view to determining whether the former interferes with the penetration of the latter or if it aids the plant in resisting the poison. Experiments were performed with pea seedlings in nutrient solutions containing either calcium sulphate, copper sulphate or a mixture of the two in certain proportions. In some cases sand cultures were used and in others quartz tubes. With the latter the solutions might be periodically renewed.—It was found that calcium does not reduce the permeability of the roots to copper, nor does copper affect the absorption of calcium. Hence it is not because of a modification in permeability that calcium is protective, nor does copper seem to be injurious because of its shutting out nutritive materials. The antitoxic action of calcium appears to be rather an internal effect, giving the plant an increased vigor to withstand toxic substances and increasing the volume of the plant through which copper may diffuse and interfering with its accumulation locally in the plant in sufficient quantity to become injurious.—*C. H. and W. K. Farr.*

PHOTOSYNTHESIS

1315. Anonymous. [Rev. of: Riedel, F. **Die Ausnützung der Hochofenabgase zur Kohlensäuredüngung. (The utilization of blast-furnace waste gases as carbon-dioxide fertilizer.)** Stahl u. Eisen, 39 Jahrg.: 1497–1506. 1919.] Rév. Gen. Sci. Pures et Appliquées **31**: 132. 1920.—This paper, rather surprisingly widely noticed, reports the experiments of an engineer familiar with the problems besetting the operators of manufacturing plants discharging deleterious fumes into the air under the methods in common use. Without any indication of the means employed to separate the carbon-dioxide from the other gases accompanying it in the stack, greenhouse and open plot experiments and controls are described, details seeming desirable and usual to horticulturists and plant physiologists are omitted, and the results are given both in graphs and words. Thus the yield from tomato plants in a greenhouse into which CO_2 was introduced through perforated pipes was $2\frac{3}{4}$ times the weight of tomatoes from an equal number of plants in a similar greenhouse with ordinary air. Similarly cucumbers weighing a total of 138 kilos were produced in an ungassed greenhouse while the yield in a gassed house was 235 kilos, 1.7 times greater. Field experiments gave results showing a gain varying from $1\frac{1}{2}$ to nearly 3 times the yield in gassed plots over those bathed in ordinary air. It may be pointed out that two photographs designed to show the advantage of adding CO_2 to ordinary air, and very striking in appearance, do not seem to be taken on the same scale. There is no evidence that botanical literature on the subject has been consulted. —*G. J. Peirce.*

1316. Spoehr, H. A. **The development of conceptions of photosynthesis since Ingen-Housz.** Sci. Monthly **9**: 32–46. 1919.—The author presents in this paper a comprehensive historical digest of the subject, emphasizing, in the earlier work, that of Ingen-Housz. It is shown that step by step Ingen-Housz approached the correct interpretation in his experi-

ments which are a masterpiece in manipulation and self-criticism. A few years later, De Saussure attacked the problem. The chemistry of Lavoisier had wrought a tremendous change. De Saussure asked a definite question and got a definite answer and established quantitative relations which others had described. Aside from the discovery of certain details of the process of photosynthesis, our knowledge of it is practically as De Saussure left it over 100 years ago. During this time something has been done by Dutrochet, Sachs, Pfeffer, Boehm, and Draper. Most of the work of the last 30 years has been along lines outlined by these workers but no new vistas have been opened nor original hypotheses formulated.—The most important problem of photosynthesis is probably the energy relation, and the old question of the action of the light in the reduction of carbon dioxid and water. Recent conceptions of the nature of light and of chemical processes ought to find application to the processes involved in photosynthesis, as should physical conceptions and methods of experimentation which as yet have not been applied to the study of photosynthesis with any degree of success.—For fifty years the formaldehyde theory of the development of sugars, formulated by Baeyer as a mere suggestion, has received greatest recognition. The experiments have followed three different lines of argument. (1) The reduction of carbon dioxid to formaldehyde by various chemical and photochemical means. (2) The detection of formaldehyde in illuminated green leaves. (3) The feeding of plants with formaldehyde as the only source of carbon. All these have yielded positive results. But a critical study of all the facts leads to the conclusion that more experimentation is needed.—The determination of the first sugar formed requires experimental proof. The fleshy joints of some cacti offer good material for this type of study. Tables of certain experiments with such material, including also the results of Brown and Morris with the garden nasturtium (*Tropaeolum majus*) are given.—*L. Pace.*

METABOLISM (GENERAL)

1317. Ciamician, G., and C. Ravenna. **Sulla influenza di alcune sostanze organiche sullo sviluppo della piante. Nota III.** [**The influence of some organic substances on the development of plants.**] Atti R. Accad. Lincei Rend. (Cl. Sci. Fis. Mat. e Nat.) 28[1]: 13–20. 1919.—Having shown in a previous article that some of the fundamental compounds for the vegetable alkaloids do not injure bean plants, while almost all the natural alkaloids (and particularly caffein) are poisonous, he takes up the study of some derivatives of these fundamental compounds. The bases were used as phosphates or tartrates in solution (1 to 1000) and bean plants were sprinkled with these. He affirms that methyl groups, far from having a protective influence on the reactive groups such as the oxyhydrate and the amino and imino groups, increases the action of the fundamental substance that contains it. Other radicals also modify the action of organic compounds on plants as the propyl group in conine, the acetyl group in acetyl piperidine, diacetyl morphine, and acetanilide, and the radical of piperic acid in piperine. He also found that some of the poisonous substances used on bean plants have considerable influence on the formation of starch and on its hydrolysis so that with the different reagents he obtained different results when treating the leaves with iodine, depending on whether one or the other of these effects was produced.—*F. M. Blodgett.*

1318. Doff, A. W., and G. W. Roark, Jr. **The utilization of a-methylglucoside by Aspergillus niger.** Jour. Biol. Chem. 41: 475–481. 1920.—This fungus grows very poorly on media containing the glucoside as the only source of carbon, but readily on sucrose media in the presence of the glucoside. There was a slight difference between the activity of cultures before and after spore formation. Gradual cumulative adaptation to a substitute through several generations could not be demonstrated with any degree of certainty.—*G. B. Rigg.*

1319. Gruzewska, (Mrs.) Z. **Contribution a l'étude de la laminarine du Laminaria flexicaulis.** [**A contribution to the study of the laminarine of Laminaria flexicaulis.**] Compt. Rend. Acad. Sci. Paris 170: 521–523. 1920.—A study of the properties of this polysaccharid reveals that it is very much like dextrine except that it is laevo-rotary. The author confirms

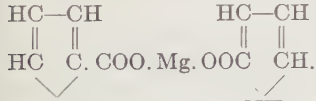
the reactions secured by Schmiedeberg. The fact that it precipitates spontaneously in water after standing a long time indicates its close relationship to the krepsine of Krefting which differs only in that it is insoluble in cool water. Laminarine is found to differ from algine in that it produces a red precipitate with alcoholic fuchsin. It is fermented by yeast and hydrolysed by many plant enzymes indicating that it is probably a reserve food of marine algae. —*C. H. and W. K. Farr.*

1320. Haas, A. R. C. **Studies on the reaction of plant juices.** Soil Sci. 9: 341–369. *1 pl., 11 fig.* 1920.—The actual and total acidities and alkali reserve of a number of agricultural plants were determined. The reaction of the juice of a plant is affected by changes in illumination, soil solution, and age. Determination of the actual acidity of alfalfa, alsike clover, barley, buckwheat, corn, peas, beans, lupines, red clover, mustard, oats, serradella, wheat, and timothy varied from P_H 5.19 to P_H 6.80. Determinations on sweet clover showed variations in acidity of 5.82 in the root to 8.00 in the upper part of the top. Young buckwheat seedlings showed less acidity than mature plants. A hydrogen-electrode vessel is described, requiring but 3–4 drops of juice.—*W. J. Robbins.*

1321. Jones, H. M. **Effect of carbohydrates on amino acid utilization of certain bacteria.** Jour. Infect. Diseases 27: 169–172. 1920.—In reply to a paper by Berman and Rettger on the effect of sugar upon protein metabolism, the author points out that, in the presence of sufficient carbohydrate, *B. proteus* shows no evidence of amino acid utilization, even though the reaction of the culture is maintained at neutrality. The softening of gelatin occurring in sugar-gelatin medium, due to the action of bacteria, is an acid rather than an enzymic-hydrolysis, and not a part of protein metabolism.—*Selman A. Waksman.*

1322. Myers, C. N., and C. Voegtlin. **The chemical isolation of vitamines.** Jour. Biol. Chem. 42: 199–205. 1920.

1323. Oddo, B., and G. Polacci. **Influenza del nucleo pirrolico nella formazione della clorofilla.** [The influence of the pyrrole nucleus in the formation of chlorophyll.] Gaz. Chim. Italiana 50: 54–70. *Fig. 1–4.* 1920.—This is in continuation of a note which appeared in 1915 (Gaz. Chim. Ital. 45: 197), and it is an extended discussion of the chemical phase of the question. After a study of the literature on the question of the importance and function of the pyrrole group in plant and animal (blood) pigments the preparation of a new compound is described. The magnesium salt of pyrrole-carbonic acid is found to have the formula



This compound was used in the preparation of nutritive solutions and plants were grown therein. The standard control solution contained the following salts: $Ca(NO_3)_2$, $(NH_4)_2SO_4$, KNO_3, KH_2PO_4. When the newly prepared magnesium pyrrole-carbonate was used, the phosphate was omitted and the organic compound used in a concentration equivalent to 0.0232 gm. of Mg. in 1000 cc. of water. *Zea mays, Solanum nigrum, Datura stramonium, Euphorbia sp.* and *Aster sinensis* were grown in solutions that were *very often* renewed. The following conclusions are appended. Plants grown in a nutrient medium free of iron but containing an assimilable pyrrole product form chlorophyll. This is a new phenomenon. Since iron is indispensable to the *greening* of the plastids, it is here suggested that its relation to the process may be one of catalyzer to the formation of the pyrrole nucleus, which in itself is the center of the chlorophyll complex. On the contrary, if this nucleus is already formed, the presence of iron is not indispensable. These experiments confirm the recent work of Willstätter and that of Eva Mameli. The function of magnesium in the *greening* of protoplasts is directly proportional to the presence of pyrrole.—*A. Bonazzi.*

1324. Okey, Ruth, and Anna W. Williams. **On inulin in the globe artichoke.** Jour. Amer. Chem. Soc. 42: 1693–1696. 1920.

1325. Power, Frederick B., and Victor K. Chesnut. **The odorous constituents of apples. Emanation of acetaldehyde from the ripe fruit.** Jour. Amer. Chem. Soc. **42**: 1509–1526. 1920.—The odorous constituents of apples were found to consist of amyl esters of formic, acetic, and caproic acids, with a small amount of caprylic ester. The authors found that acetaldehyde was exhaled. It is thought that "apple scald" may be due to this substance. Small amounts of methyl and ethyl alcohols were obtained also.—*J. M. Brannon.*

1326. Taylor, T. C., and J. M. Nelson. **Fat associated with starch.** Jour. Amer. Chem. Soc. **42**: 1726–1738. 1920.—The authors find that the major portion of the fatty material present in starch cannot be removed by solvents before hydrolysis. When corn starch freed of extraneous fat is hydrolyzed fatty acids are liberated. Palmitic acid is the principal one. The fat is liberated when hydrolysis has reached the erythrodextrin stage. The authors find that the palmitic acid is attached indirectly to the starch, directly to some unsaturated compound.—*J. M. Brannon.*

1327. Vosburgh, Warren C. **The specific rotation of fructose.** Jour. Amer. Chem. Soc. **42**: 1696–1704. 1920.

METABOLISM (NITROGEN RELATIONS)

1328. Albrecht, William Albert. **Symbiotic nitrogen fixation as influenced by the nitrogen in the soil.** Soil Sci. **9**: 275–327. *4 pl., 3 fig.* 1920.—See Bot. Absts. 6, Entry 1374.

1329. Johns, C. O., and H. C. Waterman. **Some proteins from the Georgia velvet bean, Stizolobium deeringianum.** Jour. Biol. Chem. **42**: 59–69. 1920.

1330. Osborne, T. B., and A. J. Wakeman. **The proteins of green leaves.** Jour. Biol. Chem. **42**: 1–26. 1920.—There is much less protein nitrogen than non-protein nitrogen in spinach leaves. Colloidal protein obtained from leaves is doubtless a mixture of several individuals, which are constituents of the cytoplasm and other portions of the cell. Apparently the colloidal protein occurs in the leaf in chemical combination with chlorophyll, phosphatides, and probably other substances.—*G. B. Rigg.*

1331. Perotti, R. **Su la presenza di una specie batterica nelle radici della Diplotaxis erucoides DC. [Bacteria in the roots of Diplotaxis erucoides DC.]** Atti R. Accad. Lincei Rend. (Cl. Sci. Fis. Mat. e Nat.) **28**^{1}: 331–335. 1919.—Bacteria were found constantly associated with rough gall-like swellings on the roots of *Diplotaxis erucoides* and were isolated therefrom. The organism proved to be a short motile rod and was easily grown on a variety of culture media. Under the cultural conditions used it proved neither to be ammonifying, nitrifying, denitrifying nor a fixer of nitrogen. The host is thought by agriculturists to have a fertilizing value and some explanation was sought. He affirms that the bacteria were certainly not harmful to the hosts as the latter were vigorous, but that they may have proteolytic properties which favor the movement of protein substances in the hosts and probably would be able to attack insoluble carbohydrates.—*F. M. Blodgett.*

METABOLISM (ENZYMES, FERMENTATION)

1332. André, G. **Sur l'inversion du saccharose dans le suc d'orange. [The inversion of cane sugar in orange juice.]** Compt. Rend. Acad. Sci. Paris **170**: 292–295. 1920.—Inversion of cane sugar in orange juice seems to be due primarily to the citric acid, although enzymes do play a minor part. There is less sugar inverted if the extract is boiled after neutralization than if it is not boiled. Inversion is accelerated by rise in temperature or by lengthening the boiling period of the unneutralized extract.—*C. H. and W. K. Farr.*

1333. Anonymous. **Catalysis.** [Rev. of: Rideal, Eric K., and Hugh S. Taylor. **Catalysis in theory and practise.** Macmillan & Co.: London, 1919.] Nature **104**: 463. 1920.

—The chapter on ferment and enzyme action is the part of this work which is distinctly physiological. "Ultimately the term catalysis will probably vanish from chemical literature . . . . though the term may remain for long as a convenient, though arbitrary, term of classification."—*O. A. Stevens.*

1334. Becking, L. G., M. Baas, and H. C. Hampton. **Measurement of the catalytic power of catalase.** Amer. Jour. Bot. 7: 261–274. *6 fig.* 1920.—The authors discuss and criticize the three common methods of measuring the strength of catalase action. They point out that the time in which a reaction is completed under the influence of an enzyme is the true measure of the strength of the enzyme, and describe an autographic method of measuring the reaction time of catalase. By the use of this method it was found that the reaction time is inversely proportional to the amount of enzyme present. There is a distinct latent period at the commencement of the reaction, before oxygen begins to be discharged. The enzyme is more or less injured during the reaction. The enzyme is injured by acids, but in neutral solutions retains its power for a long period. Alkali has an important effect on catalase and may act as a "peptisator." The method described may be used to determine the strength of a peroxide solution.—*E. W. Sinnott.*

1335. Burge, W. E., and E. L. Burge. **The effects of the chlorine substitution products of methane, acetaldehyde, and of sodium acetate on catalase production.** Jour. Biol. Chem. 41: 307–314. 1920.—The more chlorine that is introduced in the methane molecules, the more effective it becomes in decreasing catalase production in the liver. The ingestion of sodium acetate produces an increase in catalase. The first acts by destroying the enzyme and by decreasing the output from the liver. The second acts by stimulating the liver to increased output.—*G. B. Rigg.*

1336. Fred, E. B., W. H. Peterson, and A. Davenport. **Fermentation characteristics of certain pentose-destroying bacteria.** Jour. Biol. Chem. 42: 175–189. 1920.—Although the majority of microorganisms cannot utilize pentoses certain pentose-fermenting bacteria are widely distributed and no doubt play an important rôle in the economy of nature. Arabinose and xylose are rapidly decomposed, yielding acetic and lactic acids. Rhamnose was not attacked by pentose-fermenters.—*G. B. Rigg.*

1337. Peterson, W. H., and E. B. Fred. **The rôle of pentose-fermenting bacteria in the production of corn silage.** Jour. Biol. Chem. 41: 181–186. 1920.—Pentose-fermenting bacteria develop rapidly in raw or sterilized corn tissue. In sterilized silage they produce acetic acid, lactic acid, ethyl alcohol, and carbon dioxide.—*G. B. Rigg.*

1338. Peterson, W. H., and E. B. Fred. **The fermentation of glucose, galactose and mannose by Lactobacillus pentoaceticus. n. sp.** Jour. Biol. Chem. 42: 273–287. 1920.—The above name has been given to a pentose-fermenting bacterium exhibiting a wide range of activity both with respect to carbohydrates fermented and products formed. The aldo-hexoses, glucose, galactose, and mannose are fermented by this organism with the production of lactic acid, ethyl alcohol, carbon dioxide, and small quantities of acetic acid.—*G. B. Rigg.*

1339. Pickler, William Eugene. **Water content and temperature as factors influencing diastase formation in the barley grain.** Plant World 22: 221–238. 1919.—Some general relations of temperature to water absorption in barley seeds is discussed. Barley is semipermeable to LiCl solutions, and will absorb water even from the saturated solution. It is believed therefore that barley possesses a much higher osmotic pressure than *Xanthium* seeds. Diastase formation increases with water content of the grains at constant temperatures. Temperature was found to affect diastase formation to a much less degree than water content.—*Charles A. Shull.*

1340. Speakman, H. B. **Biochemistry of the acetone and butyl alcohol fermentation of starch by Bacillus granulobacter pectinovorum.** Jour. Biol. Chem. 41: 319–343. 1920.—This

organism, growing in a medium rich in starch changes the latter into glucose by exoenzyme activity. Glucose passes into the cell and is oxidized into acetic and butyric acids, and these are in part reduced to the corresponding alcohols.—*G. B. Rigg.*

1341. Steele, R. L., and A. C. McCarty. **Further data concerning the alleged relation of catalase to animal oxidations.** Jour. Biol. Chem. 42: 269–272. 1920.—Variations in catalase content and carbon dioxide production were not parallel in the rabbits and cats studied. —*G. B. Rigg.*

1342. Takamine, Jokichi, Jr., and Kokichi Oshima. **The properties of a specially prepared enzymic extract, Polyzime, comparing its starch liquefying power with malt diastase.** Jour. Amer. Chem. Soc. 42: 1261–1265. 1920.—"Polyzime is an aqueous extract of diastatic enzymes, made by a specially prepared culture of the fungus *Aspergillus Oryzea* on media consisting mainly of wheat bran." The diastatic power of Polyzime is preserved provided the preparation is kept at a temperature below 40°. It acts best in a neutral or slightly acid reaction. The optimum temperature for starch liquefaction by Polyzime is 50° for a digestion interval of 30 minutes to 2 hours, and 40° for a digestion interval of 24 hours. It is 3 to 4 times stronger than ordinary malt extract, according to Wohlgemuth's method.—*J. M. Brannon.*

METABOLISM (RESPIRATION)

1343. Brooks, M. M. **Comparative studies on respiration. X. Toxic and antagonistic effects of magnesium in relation to the respiration of Bacillus subtilis.** Jour. Gen. Physiol. 2: 331–336. 1920.—Concentrations of $MgCl_2$ up to 0.01 M have little effect upon the rate of respiration of *Bacillus subtilis* as measured by CO_2 production; at 0.03 M there is an increase in the rate, while in the higher concentrations (0.5 and 1.0 M) there is a gradual decrease. There is marked antagonism between $MgCl_2$ and NaCl, and a slight antagonism between $MgCl_2$ and $CaCl_2$ as measured by change in rate of respiration. Change in rate was not due to changes in alkalinity of the medium.—*H. E. Knowlton.*

GROWTH, DEVELOPMENT, REPRODUCTION

1344. Bezssonoff. **Sur l'obtention expérimentale de la sexualité chez les champignons et orientée sur la structure typique du plasma sexuel. [On the initiation of sexual reproduction in fungi by experimental means, and the existence of a cytoplasmic structure peculiar to the sexual process.]** Compt. Rend. Acad. Sci. Paris 170: 288–290. 1920.—This is a study of the effect of high concentrations of sucrose and citric acid in the nutrient media upon the cytoplasmic structure and the stimulation of the fungus to produce sex organs. The author holds that the sexual development is initiated by a retardation in oxidation processes. This is brought about by a reduction in the available water due to the high concentration of the nutritive solution. This conclusion is substantiated by cytological evidence. Numerous mitochondrial granules are found in the hyphae of species of *Aspergillus* which are beginning to form sex organs. These granules also appear abundantly in hyphae of the cultures in highly concentrated media. Their presence seems to indicate a retardation of oxidation.—*C. H. and W. K. Farr.*

1345. MacDougal, D. T. **Hydration and growth.** Proc. Amer. Phil. Soc. 58: 346–372. *Fig. 1–3.* 1919.—This paper is a summary prepared by the author from a lengthy manuscript. Conclusions are drawn from three lines of evidence, (a) "Measurements of the variations in volume of stems, leaves and fruits," correlating the rate and course of growth with environmental factors; (b) study of the composition and the arrangements of the components of living matter including seasonal and developmental changes; and (c) "measurements of the hydration reactions of tracts of living cell-masses"—"compared with the reactions of sections of plates of colloids made up in simulation of the composition of plants." Living material of plants is described as a "colloidal mixture consisting predominantly of pentosans, of a lesser proportion of albumin, albumin derivatives and amino-compounds, and of a minor

proportion of lipins, with the inevitable small amount of salts." Growth is defined as "hydration of colloidal material in a living condition" usually accompanied by increase in the colloidal mixture. As organs mature, the relative dry weight often increases, but in succulent plants the reverse is true due to the conversion of hexoses into pentosans which have a higher water capacity. Protoplasm may be considered as composed of two elements, the pentosans and the albumins, the hydration of the albumins being increased by increase in the hydrogen ion concentration and the pentosan decreased. Amino compounds increase the hydration of the artificial colloidal mixtures as well as increase the growth of plants in cultures. The mechanism of the increase of cell size is related to the assumption that the more solid phase of the cell contents would take the position of the outer layer and tend to increase faster than the liquid phase. The inter-relationships of the constituents of the solid and liquid phases of the colloidal protoplasm might form a kind of mosaic membrane, but it would be a membrane resulting from the product of the surface energy of the protoplasmic mass and that of the medium and would have "no other permanent or morphological value."

In the study of the effects of organic acids and their amino-compounds on growth the following colloids—agar, gelatin, agar-gelatin (8:2), and agar-oat-protein (8:2)—were tested at 16–17°C., for the amount of expansion from a dried thickness to complete hydration. The gelatin-asparagin test and the agar-gelatin-asparagin test are inconclusive due to the dispersion of the gelatin.

The various colloid combinations swelled, in general, in solutions of glycocoll at rates equal to or greater than in water. When glycocoll was combined with acetic acid the rate was reduced, with one exception, somewhat below that in the acid alone. It is shown by experiment with plant tissues that because of their complex nature no prediction of the effect of temperature changes upon imbibition can be made. In general "the increase in swelling in distilled water is seen to be about twice that in the acid in the rise from 18°C. to 38°C. The walnut fruit, as a type of a tissue which shows an increasing dry weight with age, and the tomato, which shows an increasing relative moisture content as it matures, were studied. Auxograph records of the course of development of the walnut shows that the increase in size is irregular, being dependent upon the ratio between transpiration and absorption. Actual shrinkages appeared when transpiration exceeded absorption. Similar results were recorded in the growth of the tomato. In both, when the increased temperature caused increased transpiration which was not offset by other conditions, the rate of growth decreased or shrinkage occurred. The percentage of water in the nuts was usually higher than in the twigs and stems which bore them. In fleshy, flat joints of *Opuntia* decrease was demonstrated at night and increase in growth coincident with the rise of temperature during the day. Decreased acidity in cells showing high pentosan content during the light period is given as the reason for this condition.—*Ernest Shaw Reynolds.*

1346. MacDougal, D. T. **The physical factors in the growth of the tomato.** Bull. Torrey Bot. Club. 47: 261–269. 1920.—Observations on growth in the fruits of the tomato showed that they could be used as an example of development and growth without increase of dry weight. The rate of increase in diameter is not a measure of the actual accretion of water and solid material; furthermore, its culmination may not be reached until the fruit approaches maturity. The conclusion is made that in young fruits, the low salt content and acidity give a set of conditions in which imbibition is the chief distentive force, and in older fruits the higher acidity and salt content make osmotic action more important.—*P. A. Munz.*

1347. Reed, H. S., and F. F. Halma. **The evidence for a growth-inhibiting substance in the pear tree.** Plant World 22: 239–247. *3 fig.* 1929.—The authors discuss the growth habits of new pear shoots, and present evidence in favor of the hypothesis that growth-inhibiting substances are generated in the apical portion of the shoot, which travel toward the base of the shoot, and maintain dormancy of the lateral buds. Horizontal shoots show the inhibition chiefly along the ventral side, while dorsal buds show considerable growth. Buds between dorsal and ventral position show intermediate growth. They take this behavior to indicate that the growth-inhibitor accumulates along the ventral side of the shoot, and thus frees the dorsal buds from its influence.—*C. A. Shull.*

1348. Salter, Robert M., and T. C. McIlvaine. **Effect of reaction of solution on germination of seeds and on growth of seedlings.** Jour. Agric. Res. 19: 73–95. *Pl. 15.* 1920.—Using two modifications of Shive's best solutions, the author obtains data showing the importance of active acidity in the germination of seeds and in the growth of seedlings of wheat, soybeans, corn, alfalfa, and red clover. Germination of the seed of the five plants as compared with the growth of the respective seedlings is found to be less sensitive to an acid reaction. The optimum reaction for germination lies between P_H 2.96 and P_H 7.71, a slightly acid reaction proving most favorable in all cases. In general, maximum growth of the seedlings of all the plants occurs in the culture with an exponent of P_H 5.94–5.16; death occurs at P_H 2.16; and growth is conspicuously depressed at P_H 7.71. During the growth of wheat seedlings, there is a general tendency for the reaction of the culture solutions to shift to a point slightly below neutrality, the value of change in reaction depending upon the stability of the solution employed.—*R. W. Webb.*

1349. Vogg, L. **Polygonum cuspidatum Siebold und Zucc. Ein Studienversuch zur Pflanzenbiologie.** [**An experimental study in plant biology.**] Ber. Naturw. Verein Schwaben u. Neuberg 42: 175–183. 1919.—The author tabulates the results obtained by his study of the growth of this Japanese *Polygonum.* For periods varying in successive years from about 4 weeks to 7 weeks he records the daily elongation of the stem, together with the temperature, the barometric pressure, the moisture of the air, and the prevailing weather conditions. In his last series of observations he records the growth of the branches, as well as that of the stem. According to his deductions moist and warm weather are essential for rapid growth. —*A. W. Evans.*

MOVEMENTS OF GROWTH AND TURGOR CHANGES

1350. Jennings, O. E. **The paper mulberry an "artillery plant."** Torreya 20: 52–53. 1920.—At Philadelphia on May 21, 1919, *Broussonetia papyrifera* Vent. was observed to be throwing out pollen in a smoky cloud, the filament apparently straightening with sufficient force to eject the pollen. In this respect the plant resembles the related *Pilea serpyllifolia* Wedd.—*J. C. Nelson.*

1351. Lorch, W. **Die Torsionen der Laubmoosseata.** [**Torsions in the setae of mosses.**] Hedwigia 61: 40–91. 1919.—One hundred and four species of mosses were examined for torsions of the setae. The results obtained embody both anatomical investigations and physiological experiments. For the experimental part of the problem a specially designed apparatus was used which permitted a rapid and accurate determination of the angle of torsion. Water content, age, and length of seta influenced greatly the degree and rapidity of the torsion movement. The results obtained from 1153 experiments seem to show that the torsion of the seta is a good specific character and that it could be made use of in taxonomic studies. —*Ernst Artschwager.*

GERMINATION, RENEWAL OF ACTIVITY

1352. Sifton, H. B. **Longevity of the seeds of cereals, clovers, and timothy.** Amer. Jour. Bot. 7: 243–251. *5 fig.* 1920.—See Bot. Absts. 6, Entry 896.

REGENERATION

1353. Harvey, R. B. **Relation of catalase, oxidase, and H+ concentration to the formation of overgrowths.** Amer. Jour. Bot. 7: 211–221. *2 fig.* 1920.—The author has studied the osmotic concentration of normal tissues and tumor tissues (produced by *Bacterium tumefaciens*) in *Ricinus* and beet, by determining the freezing point depression through the use of a thermocouple. Little difference is noted between the two types of tissue, and the author believes that the difference in osmotic concentration between them is so slight as to be quite unrelated to tumor production. The determination of the freezing point of expressed juices as an indi-

cation of osmotic concentration in the tissues he regards as open to serious objection.—The hydrogen-ion concentration he finds to be consistently a little lower in tumorous tissue, whether produced by *B. tumefaciens* or (in *Bryophyllum* leaves) by freezing, than in adjacent healthy tissue. He suggests that in the frozen tissues this may be due to precipitation of proteins. The activity of catalase and of oxidase is found to be considerably greater in tumorous than in healthy tissue, due evidently to the decrease in hydrogen-ion concentration there. The growth of intumescences in frozen spots on *Bryophyllum* leaves is apparently due to the higher rate of metabolism at these points and the consequent accumulation there of substances from the surrounding normal tissue. The author suggests that the dominance of a growing apex may be due not to a production within it of inhibiting substances but to the attraction to, and accumulation therein, of growth stimulating substances from the surrounding area.—*E. W. Sinnott.*

1354. Loeb, J. **The nature of the directive influence of gravity on the arrangement of organs in regeneration.** Jour. Gen. Physiol. 2: 373–386. 1920.—Continuing work previously reported the author shows that there is a close correlation between the distribution of a red pigment in leaves of *Bryophyllum calycinum* and the development of shoots and roots in the notches of a leaf. In leaves suspended vertically and sidewise in a moist chamber, roots and shoots develop chiefly on the lower side. It is in this region also that the red pigment collects. The red pigment is merely an indicator, for, with excess of water or in the dark, it is not evident. When shoots or roots develop on the lower side of a leaf, this half has a greater dry weight, while, when they develop on both sides, there is no appreciable difference in dry weights of the halves. The explanations offered are that gravity affects the distribution of sap, tending to cause it to collect more on the lower side, and that the organs thus favored grow a little more quickly than the others and tend to inhibit growth of similar organs in other places. Immersion of leaves in water eliminates the influence of gravity.—*Otis F. Curtis.*

1355. Loeb, J. **Quantitative laws in regeneration. II.** Jour. Gen. Physiol. 2: 651–657. 1920.—Continuing work previously reported the author gives data to confirm a previous statement that a piece of stem inhibits the growth in notches of *Bryophyllum* because necessary materials move from the leaf to the attached piece of stem. Under the conditions of the experiment the gain in weight of the stem was about 14 per cent more than the weight of shoots and roots that would have been produced from the notches if the leaf had been isolated. The distribution of a red pigment served as an indicator of the distribution of necessary materials.—*Otis F. Curtis.*

TEMPERATURE RELATIONS

1356. Northrup, John H. **Concerning the hereditary adaptation of organisms to higher temperature.** Jour. Gen. Physiol. 2: 313–318. 1920.—See Bot. Absts. 5, Entry 433.

1357. Northrup, John H. **A device for regulating the temperature of incubators either above or below room temperature.** Jour. Gen. Physiol. 2: 309–311. 1920.—The temperature is controlled by means of a relay which regulates the flow of water through the jacket of a double-walled incubator. The relay directs the stream of water either through the incubator or to the waste pipe as required by the temperature changes. Either hot or cold water may be used depending on the temperature desired.—*H. E. Knowlton.*

RADIANT ENERGY RELATIONS

1358. de Besteiro, Dolores C., and Michel-Durand. **Influence de l'éclairement sur l'absorption du glucose par les racines des plantes supérieures. [Influence of light intensity on the absorption of glucose by the roots of higher plants.]** Rev. Gen. Bot. 31: 94–108. 1919.—The effects of four different light intensities, namely: $\frac{1}{9}$, $\frac{1}{3}$, $\frac{1}{2}$, and full sunlight were determined, using *Pisum sativum*, grown singly in water cultures, with the roots growing under sterile conditions. The authors found that when the tops were grown in a limited supply of

air there was practically no difference in the dry weights of the plants produced or the amounts of glucose absorbed by the roots of the plants under the different light intensities. With the plants whose tops were allowed to develop in the normal atmosphere, however, the amounts of glucose absorbed per plant were in the proportions of 1–3–4–5 for the four light intensities. The strongest light also produced the most vigorous plants, the dry weights being in the ratio of 2–6–7–11. Although larger amounts of glucose were absorbed by the plants growing in the brighter light, the amount of glucose absorbed per unit dry weight of the entire plant was substantially the same in each case.—*R. S. Nanz.*

1359. Coupin, Henri. **Sur la production de la chlorophylle par les végétaux exposés à une lumière discontinue. [The formation of chlorophyll in plants exposed to a discontinuous light.]** Compt. Rend. Acad. Sci. Paris 170: 403–405. 1920.—Seedlings raised in darkness were exposed to diffuse light on successive days for a given period each day. The change in color of the leaves was noted. It is found that the time of exposure required to produce chlorophyll differs with the species and also with the part of the plant concerned. Regions which contain a large supply of reserve food, such as cotyledons, turn green with less exposure than those not used for storage of nutritive materials.—*C. H. and W. K. Farr.*

TOXIC AGENTS

1360. Clowes, G. H. A., and L. G. Keith. **Correlation of certain physical and chemical factors with toxicity to marine organisms.** Jour. Biol. Chem. 41: xxxvii. 1920.—Symmetrical dichloracetones are more toxic to developing sea urchins and to mice than asymmetrical ones are. The indications are that the symmetrical compounds diffuse more rapidly from a non-aqueous phase to an aqueous phase and hydrolyze more rapidly in a freely alkaline aqueous solution. Death of the cells is probably caused by the products of hydrolysis.—*G. B. Rigg.*

1361. Diénert, F. **Retard de la floraison causé par un gaz toxique. [Delay in flowering due to gas-poisoning.]** Rev. Vitic. 51: 379. 1919. Reprinted in: Rev. Gén. Sci. Pures et Appliquées, 31: 131–132. 1920.—Under the heading "Chronique et Correspondence," is a note on the above, reporting the accidental observation that the growth of a cherry tree in the open was so delayed by chlorine fumes in April that the tree bloomed in September and October and bore ripe fruit late in October. The suggestion is made that the regulated use of poisonous gases might be employed to produce desirable fruits out of season, and at high market price, by delaying the normal course of bloom and fruiting.—*G. J. Peirce.*

1362. Guerin, P., and Ch. Lormand. **Action du chlore et de diverses vapeurs sur les végétaux. [The effect of chlorine and of other gases upon plants.]** Compt. Rend. Acad. Sci. Paris 170: 401–403. 1920.—Most plants are not killed by exposure for two hours to an atmosphere containing one part in 2000 by weight of chlorine, methyl monochlor chloroformiate, bromacetone, chloropicrine, or mustard gas. The leaves usually change color and drop, but new ones appear after a time and normal growth is resumed. Leaf-fall takes place sooner in treatment with chlorine than with chloropicrine or mustard gas. Microscopic examination showed plasmolysis very soon after exposure to chlorine but only after a considerable time in mustard gas. Potted plants and cuttings of many cultivated species were used.—*C. H. and W. K. Farr.*

ELECTRICITY AND MECHANICAL AGENTS

1363. Darnell-Smith, G. P. **The electrolytic treatment of seeds (Wolfryn process) before sowing.** Agric. Gaz. New South Wales 31: 393–395. 1920.—The author reviews an article published in Jour. Ministry for Agric. 26^{10}.—*L. R. Waldron.*

MISCELLANEOUS

1364. Koehler, A. E. **A new 0.1 N calomel electrode design.** Jour. Biol. Chem. 41: 619–620. 1920.

SOIL SCIENCE

J. J. Skinner, *Editor*
F. M. Schertz, *Assistant Editor*

GENERAL

1365. Anonymous. **Fertilizers for fruits.** Amer. Fertilizer 52[5]: 59–64. 1920.—A discussion of fertilizer experiments with fruits is given and definite fertilizer formulae for different soil conditions are recommended.—*J. J. Skinner.*

1366. Anonymous. **Soil fertility experiment in the Middle West.** Amer. Fertilizer 52[5]: 101. 1920.—The number of plots and acres in soil fertility experiments in the Middle Western States are as follows: Ohio has 275 acres and 3,000 plots; Illinois, 1,115 acres; Indiana, 306 acres; Wisconsin, 103 acres; Iowa, 552 acres in 1,975 plots; and Kansas, 59 acres in 582 plots. —*J. J. Skinner.*

1367. Fippin, Elmer O. **The status of lime in soil improvement.** Amer. Fertilizer 52[5]: 118–124. 1920.—A discussion of the use of lime materials and the effect of lime on soils.—*J. J. Skinner.*

1368. Jones, Owen. **Soil fertility: Can it be preserved in Australian forests?** Australian Forest. Jour. 3: 71–72. 1920.—See Bot. Absts. 6, Entry 1032.

1369. Kelley, W. P. **The present status of alkali.** California Agric. Exp. Sta. Circ. 219. *10 p.* 1920.—The author discusses the methods of prevention and the treatment of alkali lands. Saline irrigation water is to be avoided and the water table should be kept below the capillary reach of the surface. The leaching of excess salts from the soil involves the matter of drainage. Drainage, accompanied by flooding, is used successfully to remove white alkali from soils. Black alkali requires neutralization before it can be leached from soils if present in large amounts. Gypsum or some other flocculating agent should be added before flooding soils containing small amounts of black alkali.—*A. R. C. Haas.*

1370. Maquenne, L., and E. Demoussy. **Sur l'absorption du calcium par les racines des plantes et ses propriétés antitoxique vis-à-vis du cuivre.** [**The absorption of calcium by plant roots and its antitoxic properties with respect to copper.**] Compt. Rend. Acad. Sci. Paris 170: 420–425. 1920.—See Bot. Absts. 6, Entry 1314.

1371. Stoate, P. N. **The Eucalypts in relation to soil fertility.** Australian Forest. Jour. 3: 112–113. 1920.—See Bot. Absts. 6, Entry 1044.

1372. Worth, F. J., and Maung Po Saw. **Absorption of lime by soils.** Memoirs Dept. Agric. India 5: 157–171. 1919.—The soils used in the test were Hlegu, Hmawbi, Mandalay, Pwinbyu, Hopin and Sahmaw. The work indicates a new method for estimating the lime requirements of soils. The method is based upon the absorption of calcium bicarbonate by a solution of the soil sample. Lime absorption curves are graphically represented for the above soils.—*F. M. Schertz.*

ACIDITY AND LIMING

1373. Lipman, J. G., and A. W. Blair. **Lime as a factor in maintaining soil fertility I. Rotation without legumes.** Proc. Soc. Promotion Agric. Sci. 39: 124–134. 1919.—A series of experiments covering a period of ten years and designed to show the effect of lime on the nitrogen content of the soil as well as the yields of non-leguminous crops, are described. The crop rotation was at first corn, oats two years, wheat, timothy, but this was later changed so that there was but one year of oats and two of timothy. The results indicated: 1. A greater loss of nitrogen in the limed than in the unlimed plats. 2. The yield of dry matter on the limed

and unlimed plats was practically equal. 3. The addition of 320 pounds of nitrate of soda per acre to the plats receiving 16 tons of manure per acre increased the crop yields indicating that nitrogen was a limiting factor. The authors conclude "The results of these experiments would seem to show beyond a doubt, that for the lighter coastal plain soils, lime has very little place in rotations which entirely omit legumes."—*H. N. Vinall.*

INFLUENCE OF BIOLOGICAL AGENTS

1374. Albrecht, William Albert. **Symbiotic nitrogen fixation as influenced by the nitrogen in the soil.** Soil Sci. 9: 275–327. *4 pl., 3 fig.* 1920.—Soybeans and cowpeas were grown in pots in a soil low in nitrogen and organic matter to which varying amounts of sodium nitrate or clover tops were added. Nitrogen fixation was determined by analyzing for the total nitrogen before and after growth. Nitrates up to 1500 pounds of sodium nitrate per acre did not prove injurious to nitrogen fixation and did not affect the nodule production appreciably. In some cases the decaying organic matter caused heavy losses in nitrogen but after the loss ceased, large nitrogen fixation occurred. The organic matter added increased the nitrogen fixed by cowpeas. The maximum average fixation for duplicate pots of 5 cowpea plants was 1295 mgm.—*W. J. Robbins.*

1375. Headden, W. P. **Some soil studies.** Proc. Soc. Promotion Agric. Sci. 39: 22–38. 1919.—The accumulation of excess amounts of nitric nitrogen in the soil is given as the cause of low yields and poor quality in both the sugar beet and wheat crops of Colorado. An increase of 40 parts per million of nitric nitrogen in the surface foot of soil, depressed the sugar content of beets from 15.4 to 11.9 per cent and produced other unfavorable results. It was found that a certain soil which had a maximum of 20.5 parts per million on March 4 showed a steady increase of nitric nitrogen during the summer. On August 25 the minimum was 47 parts per million and the maximum 333 parts per million of nitric nitrogen. The author believes that certain Colorado soils have the power to fix atmospheric nitrogen converting it into protein nitrogen through the agency of their bacterial flora, the **Azotobacter.** In experiments with soil taken from the fields he found a maximum nitrogen fixation of 124 parts per million in 48 days. This rate of fixation would add 1.5 tons of protein matter to the acre foot of soil in 48 days.—*H. N. Vinall.*

1376. Lipman, J. G., and A. W. Blair. **Field experiments on the availability of nitrogenous fertilizers, 1908–1917.** Soil Sci. 9: 371–392. 1920.—A report is made of the second 5 year period of a study of the availability and nitrogen losses of various nitrogenous materials under a rotation of corn, oats, wheat and two years timothy on forty 1/20 acre plots in limed and unlimed condition. The average yields of dry matter and the percentage of nitrogen recovered were greater with mineral than organic materials. From 1913–17, an average loss of 66 per cent of the applied nitrogen occurred. The limed plots during 10 years lost 250 pounds more nitrogen than the unlimed. The supply of nitrogen and carbon was best maintained on the plots receiving farm manure. The work emphasizes the difficulty of maintaining the nitrogen supply of the soil at a high level under continuous cropping to non-leguminous crops, even when commercial fertilizers are supplied.—*W. J. Robbins.*

1377. McCall, A. G., and A. M. Smith. **Effect of manure-sulphur composts upon the availability of the potassium of green sand.** Jour. Agric. Res. 19: 239–256. *1 fig.* 1920.—Two green sands, one containing 5.88 per cent of potassium, the other 1.42 per cent were used to study the effect of sulphofication upon the solubility of the potassium. In composts consisting of green sand, manure and soil in different proportions, an appreciable amount of the potassium was made water-soluble through sulphofication. The compost containing the largest proportion of manure developed the highest degree of acidity, oxidized the greatest amount of sulphur, and produced the largest quantity of water-soluble potassium, while the composts in which soil was substituted for a part of the manure developed less acidity, oxidized less sulphur and produced a smaller amount of soluble potassium. When all the manure was replaced by soil the rate of sulphofication was so slow that at the end of 23 weeks only a

very small amount of acidity had developed and very little potassium had been made soluble. When no organic matter was added the amount of acidity and soluble sulphates were no greater than might be accounted for by the natural oxidation of sulphur.—Addition of ferrous and aluminum sulphates in small amounts failed to stimulate sulphofication, while calcium carbonate added to the sulphur-manure-soil compost stimulated action in early stages but the end result was no greater than without it.—More water-soluble potassium was formed from the high-potassium green sand but a larger percentage of total potassium present was liberated in the composts containing the low-potassium green sand. The total amounts of potassium recovered in aqueous extracts from the composts containing manure varied from 9.1 to 41.3 per cent of the total initial amounts present.—Composting of green sand, or of soil rich in potassium, with sulphur and manure may prove a practicable method of obtaining available potassium from comparatively insoluble materials.—*D. Reddick.*

1378. NELLER, J. R. **The potential biochemical activity of the spores of soil bacteria.** Soil Sci. 9: 329–340. *1 fig.* 1920.—Infusions from five successive layers of the upper 64 cm. of soil were heated to 85°C. for 10 minutes. This treatment destroyed 91.3–98.4 per cent of the organisms originally present. Inoculating with heated infusions produced 39–46.6 per cent as much ammonia in 7 days and about 77 per cent of the CO_2 produced by inoculating with unheated infusions. The bacterial spores of the soil are capable of energetic activity when supplied with sufficient food and moisture.—*W. J. Robbins.*

1379. PLYMEN, F. J., AND BAL. **The biological aspects of wheat cultivation on embanked soils.** Agric. Jour. India 15: 289–300. 1920.—Cultivation and other means of increasing aeration of the black flood soils produce a condition favorable to crop production. The soils possess good power for ammonification and N fixation but are slow in nitrification. Nitrification increases when the rainy weather cultivation is performed. Lack of available nitrogen or the presence of some deleterious substance formed under anaerobic conditions is attributed to be the cause of crop failure.—*J. J. Skinner.*

CROP FERTILIZATION

1380. BLAIR, A. W. **Utilizing soil potash by means of intermediary crops.** Proc. Soc. Promotion Agric. Sci. 39: 69–74. 1919.—New sources of potash discovered by chemists in the United States have made available "not over one-fourth of the pre-war consumption" of potash fertilizer. Most of the soils in the United States are well supplied with potash in the form of mineral materials but much of this potash is unavailable or only slowly available to the growing crop. In a study of the problem of making this supply of potash available it was found that the dry matter of rape and field peas contained an unusually large percentage of K_2O. The growing of such crops as a preparation for corn, alfalfa, or small grain is suggested as a means of supplying the desired potash in available form.—*H. N. Vinall.*

1381. CONNER, S. D., AND E. N. FERGUS. **Borax in fertilizers.** Purdue Univ. Agric. Exp. Sta. Bull. 239. *15 p., 4 fig.* 1920.—Borax injury to corn resulting from the use of Searles Lake potash in Indiana during 1917–1919 is described. Field tests conducted at two points in 1919 showed that from 0.5 up to 4 pounds of borax per acre produced injury when drilled in the row with corn, that 16–18 pounds worked into the entire surface soil produced no injury, and that the damage was less in clay than in sand or muck, less in neutral than in acid soils, and less when rains accompanied the application. Borax causes injury by retarding or preventing chlorophyll formation. Bleaching, tip burn and wilting are the symptoms. Soybeans are more sensitive to borax than corn, while wheat, oats, rye and corn are equally susceptible. Only the Searles Lake potash contained enough borax to cause injury. Field tests showed that American potash fertilizer was equivalent to the German product in fertilizing values. A brief résumé of the literature is presented.—*Max W. Gardner.*

1382. VOELCKER, J. AUGUSTUS. **The Woburn Experimental Station of the Royal Agricultural Society of England. Field experiments, 1919.** Jour. Royal Agric. Soc. England, 80:

418–430. 1919.—The 43rd report of the fertilizer experiments with the continuous growth of wheat and barley is made. The application of ammonium sulphate year after year has produced an acid condition which prevents a good growth. Largest yield was secured with stable manure. Manure from animals fed linseed and cotton cake was practically the same as that from corn fed animals. Leather as a source of nitrogen was ineffective. Ground limestone produced larger yields than did chalk.—*J. J. Skinner.*

1383. Voelcker, J. Augustus. **The Woburn Experimental Station of the Royal Agricultural Society of England. Pot-culture experiments, 1919.** Jour. Royal Agric. Soc. England, 80: 430–438. *3 pl.* 1919.—It is shown that insoluble forms of arsenic, as arsenious acid, up to 0.1 per cent can be used without injury to wheat. The more soluble forms as arsenic acid or the soda salts of either arsenious or arsenic acid cause a decrease when used in amounts of 0.02 per cent and kill at 0.05 per cent. As a top dressing sodium nitrate proved more valuable than did ammonium sulphate, ammonium nitrate or calcium nitrate.—*J. J. Skinner.*

FERTILIZER RESOURCES

1384. Anonymous. **Fertilizer work by the Government in 1919.** Amer. Fertilizer 52^2: 61–63. 1920.—Details from reports of several Bureaus of the U. S. Department of Agriculture. —*J. J. Skinner.*

1385. Anonymous. **Potash and bromine in Texas lakes.** Amer. Fertilizer 52^8: 72–73. 1920.—Brines that contain potash and bromine have been discovered in alkali lakes in Gaines, Lynn and Terry Counties, Texas, on the plain south of the Panhandle region. The lakes range in area from 35 to 7000 acres, lie in flat valleys and have no surface outlet. Analysis of brines from two of the lakes is given. The salts of these brines contain a smaller percentage of potash than that yielded by the potash material of Germany, Alsace, Nebraska, and Searles Lake, but they contain a relatively high percentage of bromine.—*J. J. Skinner.*

1386. Anonymous. **Note.** Nature 104: 447. 1920.—Reference to results obtained by Garelli reported in La Nature for Nov. 29, 1919, on extracting nitrate of ammonia from surplus stock of explosives.—*O. A. Stevens.*

1387. Briggs, L. George, **A survey of the weighing and handling problem of the fertilizer industry.** Amer. Fertilizer 52^{12}: 102c–103. 1920.—Equipment used in fertilizer manufacture is discussed.—*J. J. Skinner.*

1388. Calvino, Mario. **La fertilidad de le tierra y los abonos. V. Los abonos minerales. [Chemical fertilizers.]** Revist. Agric. Com. y Trab. 3: 23–26. *2 fig.* 1920.

1389. Carter, Spencer L. **The manufacture and distribution of acid phosphate.** Amer. Fertilizer 52^4: 61–66. 1920.—An address delivered during Farmers' Week at the Ohio State University, discussing the details of acid phosphate manufacture.—*J. J. Skinner.*

1390. Goldenweiser, E. A. **A survey of the fertilizer industry.** Amer. Fertilizer 52^1: 53–68a. 1920.—A general survey of the fertilizer industry is given, together with tabular material and a discussion of the following subjects: Materials used in mixed fertilizers; materials used in the manufacture of sulphuric acid; sources of ammonia and amounts of each used in mixed fertilizers in 1918.—*J. J. Skinner.*

1391. Huntington, W. D. **The future of the fertilizer industry.** Amer. Fertilizer 52^7: 61–63. 1920.

1392. Whittle, C. A. **Fertilizer formula finder for southern crops.** Amer. Fertilizer 52^6: 58–59. 1920.—The description of a fertilizer formula finder issued by J. N. Harper. The instrument is a double disc made of card board and is unique in many particulars. With a given crop in mind the disc is turned, one upon the other, according to directions and a desirable fertilizer combination is given for any soil type.—*J. J. Skinner.*

MISCELLANEOUS, UNCLASSIFIED PUBLICATIONS

Burton E. Livingston, *Editor*

1393. Lantes, Adelaide. **Una desecadora para ejemplares de herbario.** [**A desiccator for botanical specimens.**] Revist. Agric. Com. y Trab. 3: 32. 1920.—Describes a box built to dry botanical specimens by the use of some hygroscopic material such as quicklime.—*F. M. Blodgett.*

1394. Lee, G. S. **Abaca (Manila hemp): the fiber monopoly of the Philippine Islands.** Sci. Monthly 11: 159–170. 1920.—The natives of the Philippines use varieties of ferns, palms, battams, and vines for their fibers. But Abaco and Maguey are of notable commercial importance for rope and bag manufacture. Sissal, henequen, kapok and ramie have possibilities, but have not been fully developed.—The abaco plant is closely related to the banana and the plantain. The name Manila hemp is very misleading, suggesting as it does *Cannabis sativa*, while it really comes from *Musa textilis*. Abaco is the term applied to the plant as well as to the fiber. As many as fourteen varieties of this plant are cultivated. It is most successfully cultivated in the south two-thirds of the Philippines up to 300 feet above sea-level. —Methods of cultivation, kinds of soil, harvesting, etc., are briefly discussed.—The fiber is extracted from the overlapping leaf-bases. It is used for ropes, hats, matting, etc., and the waste is used in making Manila paper.—*L. Pace.*

1395. Smyth, E. Graywood. **Cotton insects in Porto Rico.** Entomol. News 31: 121–125. 1920.—Pink boll worm not reported as yet. Cotton leaf caterpillar often locally serious; control by dusting method too expensive for average grower and destruction of wild food plants of the insect is advised. Chief of these are *Urena lobata* and *Malachra rotundifolia*, the former attracting the fire ant *Solenopsis geminata* by honey ducts on the underside of the leaf. This weed carries the insect across the gap between cotton crops. Thrips cause scars underneath the calyx and seem to be concerned with a disease which causes adherence of calxy to boll thus preventing proper bursting. Other insects mentioned, also a fungus *Agrostalagmus albus* as a natural enemy of the cotton aphis.—*O. A. Stevens.*

1396. Weiss, Harry B. **Notes on Thymalus fulgidus Er., and its fungus hosts in New Jersey.** Entomol. News 31: 1–3. 1920.—Notes on life history of a beetle which breeds in *Polyporus betulinus* and *Daldalea confragosa*. Both larvae and adults feed on the fungus and when numerous completely riddle it.—*O. A. Stevens.*

1397. Wittrock, Veit Brecher. **Anteckningar om nordiska namn på Stellaria media (L.) Cyr.** [**Notes on Norse names of Stellaria media (L.) Cyr.**] [Swedish.] Acta Horti Bergiani (Stockholm) 6^2: 1–40. *Map.* Posthumous, edited by Rob. E. Fries. 1918.—The author gives an extensive list of names for *Stellaria media*, used in Sweden, Norway, Denmark, Faeroe Islands, Iceland, Finland and Lapland, also recording the provinces or districts where the different names are used.—*P. A. Rydberg.*